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March, 1938

"Let There Be Sight"

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"Sight Begins at Forty"

Ellice M. Alger, M.D.

THE eyes of the middle-aged are subject to many diseases and changes, yet, if properly cared for, they may be as efficient as they ever were in youth.

MOST people enter the period of middle life with a feeling of profound discouragement. They are increasingly conscious that they can no longer do things as well or as easily as they once did and the joy of accomplishment has gone out of them. Ambitions have failed of realization or have proved disappointing. Health itself instead of being effortless and automatic requires a conscious or subconscious attention that it never did before. Professor Pitkin, who wrote the book, *Life Begins at Forty*, did a great service to humanity when he pointed out the compensations and even the advantages of middle life, and no better proof could be asked of the universality of the need than the fact that the book has been a "best seller" over a period of years.

One of the most discouraging things about the whole period is the gradual failure of the eyes, which are a very essential factor in a contented and useful middle age. For age brings its own eye problems quite different from those of youth. The eyes tire sooner than they did and vision is not so automatically clear. The acute inflammations and infections are not so common as in youth, but they have a greater tendency to become chronic. It takes longer to get over things; exudates absorb more slowly and repair takes longer; recurrences are more frequent; until finally we may have a whole line of degenerative changes not occurring in youth, which we have been accustomed to speak of as senile. They interfere with our comfort and sometimes lessen our vision. And finally there is the dread of the loss of sight itself, of which we become increasingly fearful.

But the picture is not by any means as drab as it seems. As a matter of fact much can be done to mitigate these discomforts and postpone these changes and cure these diseases. Properly cared for, the eyes of the elderly are often more efficient and less troublesome than they ever were in youth. It might almost be possible to paraphrase Professor Pitkin's famous title and say that "Sight Begins at Forty!"

Loss of Accommodation With Age

The young child has the keenest of distance vision and at the same time he can thread a tiny needle or read the finest print held within three or four inches of the eyes. He can do this because he has a lens in his eye as clear as crystal and as elastic as live rubber, so that it adjusts to near or far vision without effort. As he gets older the lens remains transparent, but it becomes more and more inelastic. He still sees perfectly at a distance but his near point recedes steadily. By the time he is forty-five he can just about read fine print. He begins to hold his book farther away than is comfortable, and laughingly says that his eyes are all right but his arms are too short. He requires stronger and stronger light. If he is compelled to use his eyes too much, they get tired—he goes to sleep over his book and blames his dinner; or he gets an eyeache or a headache. There is a long list of aches and pains that follow the forcing of tired eyes.

To this universal physiological inability of the aging eyes to focus, we give the name presbyopia, or "old sight." Ordinarily it begins some time in the early forties, but if one is farsighted or astigmatic, it comes earlier. If one is nearsighted, it may not come at all. The eyes of the farmer, or the sailor, or laborer, with little near work to do, may function efficiently long after forty; while ill health or overwork brings it on much earlier.

But sooner or later most of us have to wear convex glasses which "magnify" the print and bring it "nearer" and, in doing so, make near vision sharp, without fatigue. If one is farsighted or astigmatic, the presbyopic correction must be added to that of the distance. There are many people, especially ladies, who are quite determined that so long as they show no other indication of advancing age they are certainly not going to admit it by wearing glasses.

Each year sees a new crop of lotions, drops, tonics, and reading lamps advertised as substitutes for glasses, which are sold to these people.

Of course, glasses are at best more or less of a nuisance and not to be used unless the benefits more than counterbalance the inconveniences. One should remember, whether he uses glasses or not, that the closer he holds his book the more he has to focus and strain, while the farther away, the more relaxed his eyes are and the longer he can read without getting tired. Reading glasses should, however, not be stronger than necessary, for one does not wish to become dependent on them too soon, and it is much better to leave part of the focussing for the eyes themselves. However, for people who have real work to do and who must wear glasses of some kind, it makes little difference whether the glasses are strong or weak as long as they are efficient.

Diseases Occurring in Aging Eyes

One of the great compensations for the onset of "old sight" is that it results or should result in a complete and careful examination of the eyes, perhaps the first the patient has ever had. There should be a lot more to it than the mere examination for glasses, for the list of diseases that commonly occur in aging eyes is a rather long one. Some of them are rare and some of them very common; some are trivial and self-limited, others are painful and tend to get worse. Some of them threaten sight alone, while a few threaten life itself. There is no argument that applies to the annual physical examination of the body which does not apply with equal force to the eyes. The only person who is competent to make this kind of an examination is the eye physician. He has been trained to know and treat diseases whether they involve the eyes alone or the body behind the eyes. His work overlaps on many other specialties. He must have a knowledge of eugenics, pediatrics, neurology, and general medicine. He must always have in mind syphilis, tuberculosis, the toxemias, and the focal infections, and even the various tumors. He must be skilled in a highly specialized form of surgery.

As we get older the conjunctiva is not quite so smooth and white as it used to be, but gets thicker, and redder, and rougher. There is sometimes a scant irritating secretion which makes the eyes feel

full of sand. The lids get red and scaly and often chap and crack at the outer angle. Conjunctivitis tends to come back with every head cold. The lid reactions are slower, and the eyelashes fewer and shorter. Consequently elderly persons often get foreign bodies in their eyes. The eyes water and run sometimes because the irritation is enough to cause a profuse flow of tears, and perhaps because the tear ducts are stopped up. These are minor ills, but they are very annoying. Sometimes they can be controlled by domestic treatment, like hot compresses or boric acid solutions, but in many cases a physician must be consulted.

The fact that one can see perfectly is no proof that his eyes are healthy, neither is bad sight a necessary sign of disease; but if the vision cannot be made normal with glasses, one should find out the reason why.

Cataract

When the sight begins to fail the thing that the average adult dreads more than anything is cataract. He has seen it among his elders, and fears the impairment of vision and perhaps an unsuccessful operation at the end. Many people are as depressed about cataracts as they would be about cancer. And yet in many cases it is not such a terrible thing. It is not necessarily conspicuous and, unless complicated in some way, it is never painful. It occurs in many forms, some due to disease like diabetes or to accident; but for the most part it is the result of perfectly natural senile opacities in the crystalline lens. One of the first things to arouse the physician's suspicion is that, in the beginning, the lens, while still perfectly transparent, swells and makes the patient near-sighted. He often finds that he can again read without glasses, and is very proud of his so-called "second sight."

If the opacities begin in the center of the lens, directly behind the pupil, they blur the vision from the very beginning, but in the majority of cases they begin in the periphery and need cause no great disturbance of vision for years and years. A careful study of a very large number of case histories showed that on the average a period of 15 years elapsed from the time the cataract was first discovered till it became "ripe" enough for operation. And when operation becomes necessary, the results, in spite of occasional mis-

haps, are almost uniformly good. The few bad ones are conspicuously evident while the good ones are not paraded or seen. With glasses, both far and near vision is often as good as it ever was in youth.

Since cataracts are often stationary for long years and occasionally clear up spontaneously, almost every eye physician has experimented in ways of imitating and outdoing nature, and numerous drugs and treatments have been advocated all over the world. Many of them are obvious frauds, some of them are actually dangerous, while others are good examples of wishful thinking. Almost every physician who has happened on a series of slowly progressing cataracts has thought he has discovered the secret only to have his hopes dashed as the cases average up. It is quite impossible to tell what has been accomplished in a condition which progresses so slowly and so irregularly. But there are many things that the physician can do in individual cases to prolong useful vision, and he is the one to decide when the cataract is ready for operation, and what are the chances of success.

Glaucoma

Perhaps the most serious of eye diseases which threaten people as they grow older is glaucoma. While it is not nearly so common as cataract, it is much more difficult to recognize in its beginning, and it often results in complete blindness in spite of the most careful treatment.

The eyeball is essentially a tough sac which would collapse if it were not filled and kept round by a fluid which is abstracted from the blood. This transparent fluid not only makes sight possible but carries nourishment to parts of the eye which have no circulation of their own, and then flows off through a physiological filter or valve. This automatically regulates the hardness or tension of the eye. There are some diseases in which the eye becomes too soft, but in all the forms of glaucoma it becomes too hard, sometimes stony hard, and the continued hydraulic pressure gradually destroys the delicate fibers of the retina and optic nerve and causes blindness. Sometimes there is an overwhelming swelling of the contents of the globe not unlike a hive in the skin. This causes a sudden and extreme rise in tension or hardness which we call acute

glaucoma. Unless this is promptly controlled, the sight may be ruined in a few hours' time. Sometimes the same is caused by inflammatory changes that fill the aqueous with exudates and deposits which plaster up the filter so that it ceases to function. But the relieving fact about all the acute glaucoma is that the patient knows at once that something serious is happening. He has a violent pain, sees rainbows about lights, and with it a terrifying reduction of vision, so that he consults an eye physician at once and in most cases the condition can be controlled before serious damage has been done.

The great destroyer of sight, however, is chronic simple glaucoma, which comes on so slowly and insidiously that it is not noted. The tension of the eye need not be very high or even constant. The patient gradually loses his capacity to see well out of the corners of his eyes, but often he hardly notices this as long as his central vision is sharp. There is no pain, often no rainbows, and for a long time no great diminution of vision. The process may run over months or even years, and the patient often discovers by accident that he has practically lost the sight of an eye. When he gets to the physician at this stage the diagnosis is perfectly simple. The pupil is large and sluggish, the eye feels harder than normal to the touch, the side vision has been impaired, perhaps the central as well, and the changes in the retina and optic nerve are conclusive. Unfortunately the damage which has been done is permanent. If the tension can be reduced within normal limits by treatment or operation, one can check the progress of the disease, but the sight that has been lost is lost forever.

In its very beginning glaucoma can be quite easily overlooked even by the physician himself, especially in patients whom he sees only at very long intervals. The pupils may be a little large, but the vision and the fields and the blind spots, on which we depend so much, have not yet been changed. The tension itself may be above normal only at night, and the optic nerve still seems normal. Only a careful and highly technical examination can detect the disease at this stage, and it is undoubtedly very often overlooked. When the diagnosis has been established, the patient must be under the frequent observation of his physician. He has delicate instruments for measuring the hardness of the eye. He keeps careful

records of the central vision, and the fields of vision, and can tell with certainty whether the disease is stationary or progressive. On his judgment the patient must depend for the decision as to whether treatment is sufficient or operation necessary. There must be no let up in the treatment, for any ground that is lost in the interval is lost forever. Many patients can be kept within normal limits year after year by the careful and unremitting use of drops which keep the pupil contracted to pinhead size. Conversely, anything that tends to dilate the pupil is dangerous, whether it be drops or emotions or even sleep. If operation was always successful, it would be infinitely preferable to have it over with rather than endure the drudgery of watchful waiting and constant worry, but the results of a perfect operation are not by any means always permanent and do not always obviate the use of drops or the frequent observation of the eyes.

Other Diseases

As people get older they tend to develop what might almost be called physiological changes in their blood vessels. The walls of the arteries particularly tend to become thicker and less elastic, until finally they degenerate into rigid and contracted tubes. In popular parlance, they have become "hardened." It requires much more pressure to keep up circulation through these contracted tubes and several unfortunate results follow. There is less fresh blood pumped into the tissues, and less old blood taken away, and the tissues have relatively short rations of oxygen and food. This results in impaired function and gradual degeneration. The efforts of the heart to keep up the circulation result in its enlargement, while the blood pressure in the inelastic arteries keeps getting higher and higher. Sooner or later the heart reaches its limit and dilates, or the arteries can no longer stand the pressure and leak or burst like bits of old hose.

Chronic kidney disease is an especially important factor in this cycle. The eye is practically the only place in the whole body where these vascular changes can be seen and studied. We see hemorrhages on the white of the eye which are not particularly important except as warnings, for they are absorbed without leaving a trace. But in the retina we can follow the whole picture

from the first narrowing of the arteries until they get to look like silver wires. We can see the area of poisoned or degenerated retina which, with the great disturbances of vision and hemorrhages of all sorts, from the merest little leak to one that fills the whole eye with blood, presents a complete picture. The retina is really a part of the brain and the changes that occur in one are likely to be duplicated in the other, from the tiny cerebral hemorrhage that causes the paralysis of a single eye muscle, to the large strokes that paralyze or kill. A careful routine examination of the eyes by one who knows how often reveals unsuspected conditions, like Bright's disease, diabetes, brain tumor, or locomotor ataxia, while there is still time to do something about them—before sight has been irretrievably damaged or the possibility of recovery gone forever.

I have written of only a few of the conditions that may affect the eyes of aging people. Some conditions are dangerous and require immediate treatment. There are others in which watchful waiting is about all that we can do, and in which there is much to be gained by keeping the patient in ignorance as long as possible. There are others in which the fullest revelation is the wisest and kindest thing. In the final analysis, the physician who has been given an opportunity of seeing his patient at required intervals is best able to judge the course to follow in each instance.

A Consideration of Student Eye Health from the Ophthalmologist's Point of View*

William L. Benedict, M.D.

AFTER presenting a brief survey of eye defects encountered throughout life, the author concentrates on the eye problems of the adolescent and youth of college age, and indicates that many of these problems may be solved by proper diet, satisfactory refraction, and correct illumination.

I UNDERSTAND that the problems of the Eye Health Committee of the Student Health Association have to do with conservation of vision of students and teachers and the improvement of conditions under which eye work is done. A consideration of these problems requires some knowledge of the anatomical development of the eye, of general physiology and particularly physiology of the eye, and of the function of seeing. To assume that the eye is an organ from which certain things may be expected under standardized conditions is to ignore the fundamental principle of inequality of natural stock from which individuals spring and of the environment in which their development has occurred. While we may set up standards of efficiency under which we may reasonably expect the majority of individuals to function in a similar manner and with similar endurance, we are all cognizant of the tremendous capability of some individuals who have eyes that organically are inferior but nevertheless do not break down under strenuous work. On the other hand, teachers and physicians are continually confronted with the necessity of making adjustments for persons in apparently perfect health and with organically normal eyes that for one reason or another are unable to maintain ordinary effort.

* Presented under the title, "Newer Knowledge of Eye Health," at the program of the Committee on Eye Health during the Eighteenth Annual Meeting of the American Student Health Association, December 31, 1937.

Only certain phases of these problems can be discussed in the short time available at this meeting, but I should like to take this opportunity to point out what appears to me, as an ophthalmologist, to be the most important items to which this Committee may direct its attention.

Stages in the Development of the Eye

Ontogenetically, the eye is one of the first parts of the human embryo to show differentiation. Strangely enough, the final development of the eye is not completed until the individual is approximately twenty-five years of age. During the process of development, many changes may be brought about in the eye through deviation, arrest, aberration, constriction, toxemia and disease. The tendency toward hereditary ocular defects is familiar to all students of genetics, but I think we sometimes fail to realize that many of the abnormalities that appear in early and middle life are due to influences which have their beginning in the earliest stages of embryonic development, and, either through negative or positive means of action, have an almost predictable effect upon the function of an eye of an individual with normal life expectancy. The more severe physical abnormalities result in such conditions as anophthalmos, microphthalmos, coloboma, optic atrophy, cataract, and corneal leukoma, all conditions with which ophthalmologists are familiar and conditions which are known to teachers of the blind. The less severe abnormalities, however, may result in only partial loss of function and, while constituting a distinct handicap, do not make it impossible for one to use the eyes a great deal.

We may divide into five stages the growth and development of the eye, in order to bring out more clearly the relationship between organic growth and function and, in a measure, to justify the reasons for setting up means of avoiding damage to the eyes through usage or conditions which would render use of the eyes ineffectual. The five stages of development may be indicated as: prenatal, infancy, youth or adolescence, maturity, and senility.

Prenatal Stage

In the prenatal period occur those changes that are likely to result in maldevelopment of the eye, producing what we usually

term as hereditary abnormalities. It should be borne in mind, however, that the date of birth is only an incident in the development of the human being and that what occurs shortly before birth, or shortly after, to interfere with the proper development of the eye may, with equal propriety, be termed congenital accidents. During the entire prenatal period the development of the eyes may be influenced not only by substances which affect the mother but also causes which arise directly within the fetus. For example, all of the endocrine organs of the mother are brought into increased activity during the life of the fetus. As the endocrine organs of the fetus develop and begin to assume their own function, a balance must be set up between the functions of the endocrine organs of the mother as against those of the fetus. Abnormal activity of these glands on the part of the fetus may result in abnormal development of the eyes.

Under certain conditions the development of the fetus may be materially changed by extraneous forces. The result of the external forces is easily demonstrated in experimental animals of rapid development through the introduction of toxic substances, such as alcohol, mercury or iodine, or by irradiation, particularly by *x*-rays, or by feeding diets that are deficient in some of the necessary vitamins. Many of the changes resulting from these sources are apparent at birth, but other changes may not appear until several years later.

Development During Infancy

During infancy the function of the eye develops. The macula is not formed until the infant is about three months of age. Ocular movements depend upon fixation and, until the macula is developed, the eyes of an infant may not be directed toward an object at will, and it is quite probable that the vision is not acute. During the first three months of life it is not uncommon to find children's eyes divergent or crossed, not because of any organic defect of the eyes but because of immaturity. It is doubtful whether the further development of the eyes can be materially influenced during this period except by means which would produce tissue trauma. In later months, however, up to the period of three to four years, the function of the eye becomes more highly specialized. It would

seem prudent to permit seeing to develop in a natural manner rather than to encourage close application of the eyes through the use of small toys, perusal of pictures, and other means of close visual application. During these first two periods, the prenatal and the period of infancy, the eyes are particularly subject to damage from disease. Acute diseases of the mother, such as measles, chicken-pox, scarlet fever, or infections, such as septicemia, venereal diseases and tuberculosis, may be active in the prenatal period and subject the eye of the embryo to slight or severe damage. Disorders and defects of the eye that result from diseases of the mother usually are discernible shortly after birth. The same diseases affecting the child may produce exactly similar damage to the eyes, so that in later years it is impossible to determine whether the damage occurred before or after birth, whether any discernible lesion should be considered congenital or acquired; and, as a matter of fact, it makes no difference.

There are a few disorders and diseases of the eyes that are considered to be hereditary, that is to say, they appear in several members of one family, not only in siblings but in succeeding generations. However, not all ocular defects resulting from these diseases are congenital. For example, such a disease is retinitis pigmentosa, a chronic progressive degeneration of the choroid and retina that makes its first appearance some years after birth and is not amenable to treatment. Many persons affected by retinitis pigmentosa have adequate vision until they are well along in college life. The disease may not be discernible by any test or examination in the earlier years but cannot escape detection after its progress has become established. Another example of hereditary disease is known as Leber's disease, which consists of degeneration of the retina and optic nerve sometimes associated with mental degeneration and which becomes apparent usually during the school age. Ocular defects and early degeneration are associated with diseases of the endocrine glands that have hereditary influence, such as the Lawrence-Moon-Beadle syndrome. There is also some question as to whether or not we should include in this category glaucoma and myopia. There are certain characteristics of glaucoma that would warrant such consideration. For example, severe glaucoma in the fetus may result in prenatal buphthalmos. Juvenile glaucoma also

often results in marked enlargement of the eyeball through increased intra-ocular tension. Influences which act upon the eyeball to increase its size without otherwise interfering with normal development will, of course, result in myopia. Eighty per cent of the children born with apparently normal eyes are hyperopic at birth. Some of these become myopic afterward. The tendency to myopia is undoubtedly more marked in some families than in others, and while it may be regarded as a recessive trait, it may also be considered as an hereditary characteristic. How much change in the development of myopia can be brought about by external influences is a question on which there is considerable divergence of opinion. Whether the course of myopia can be arrested or materially influenced by use of the eyes or by protection of the eyes is not definitely determined.

During the stage of maturity and senility the visual function, for one reason or another, may be expected to decline. In this Committee we are not particularly concerned with the use of the eyes beyond the college age, but if external forces, use or abuse of the eyes in any way determines the function of the eye in the later periods of life, then certainly such influences should be considered.

Eye Disorders During Adolescence

Ocular disorders during the later school years may be attributed to one or more of four particular influences.

First, let us consider the effect of systemic disease. During adolescence children are susceptible to constitutional diseases, particularly tuberculosis, rheumatism and pluriglandular disease. The age at which symptoms of such diseases develop shows considerable variation. The child that has matured at the age of fifteen may not show significant symptoms or pluriglandular disease until the age of eighteen or twenty. Juvenile tuberculosis may not become sufficiently established to attract attention until in the later teens. Evidences of hereditary lues, particularly interstitial keratitis, retinitis pigmentosa, optic atrophy, will quite likely appear in the later teen age.

The second most important cause of acquired ocular disorders is focal infection. Among the more significant may be mentioned tonsillitis, dental infection, and chronic disease of the middle ear.

The director of public health in one of the large universities informed me that he thought one of their most important activities yet to be developed had to do with adequate care of the teeth. The incidence of ocular inflammation from periapical dental infection is well recognized and it is quite evident that dental infection in youth is much more likely to produce an ocular inflammation than an equally severe dental infection occurring in the later years of life. Transient focal infections do not, as a rule, permit an individual to establish immunity, and repeated infections must be looked upon as repeated insults to the system, and in any single episode of dental infection an eye complication may arise.

Another, but more remote cause of ocular disorders among people of college age comes about through the use of alcohol and tobacco. Excessive use of either of these substances is reflected in reduction in vision and conjunctival congestion. These substances may act directly on the eyes or indirectly by dulling the sensibilities to such an extent that the eyes will not function properly. The effects on stability of vision, disturbances of ocular motility, and interference with accommodation may be seen as transient effects from small amounts of alcohol and tobacco. While normal eyes may well survive repeated insults from these toxic sources, eyes that have previously been injured by disease or are inferior may suffer permanent deleterious effects from comparatively small amounts of such poisons as these. The indirect effect of the excessive use of alcohol and tobacco comes about through malnutrition. Alcohol or tobacco cannot be considered as a substitute for food. Small amounts may stimulate the appetite, but excessive amounts, particularly of tobacco, will probably reduce the appetite.

Vitamin Deficiency

Experiments on animals during the past few years have established beyond any doubt the need of adequate vitamins in a diet of the mother during the early stage of development of the fetus. Anophthalmos, microphthalmos, and various grades of arrested development of the eyes of pig embryos may be brought about by a diet deficient in vitamins. There is much evidence to indicate that some of the supposedly congenital abnormalities or hereditary influences in the human have been brought about through insufficient nutri-

tion on the part of the mother. The effects of malnutrition in the adult may not at once be apparent and may only be elicited by special experiments quickly. As a rule, recovery follows inclusion of an adequate amount of vitamins in the diet. There are conditions under which college students live that, to my mind, are extremely important to this Committee on Eye Health. In some of our large universities a few students are living in small rooms, inadequately heated and ventilated, take many of their meals at drug store or lunch-wagon counters from food handlers who are not adequately supervised or inspected, and subsist on a diet that is inadequate in one or more of the necessary elements. More and more students are compelled to subsist on pick-up meals either because of inability to find adequate boarding houses or because of economic necessity. I am convinced that in the past twenty-five years the tendency has been toward inadequate rather than more adequate nourishment among a large proportion of the student population of our larger institutions. There is no question but that smoking is more prevalent, and the drinking of hard liquor is probably more prevalent among students than it was 25 years ago. Among college women the desire to remain thin, or, as the English people say, to practice slimming by light eating, may be a passing fad, but at the present time I think it constitutes one of our greatest health hazards and is one of the most marked influences in the production of headaches and other symptoms which may be referred to the eyes.

The remedy for eye symptoms that may develop through any one of these influences does not lie in the prescribing of glasses or improving the illumination or in any type of treatment applied directly to the eye. The conditions under which ocular disorders develop should be investigated and unfavorable conditions should be corrected. The closest co-operation between the oculist, the student health director and the school is required to bring about better conditions under which students work and live during their college years. Obviously, investigation of students' living conditions is as important as a thorough physical examination, and the circumstances under which the individual student works must be made a part of the medical record.

Refraction as a Therapeutic Measure

In schools that have an established student health program, provision has been set up for refraction of those students who have symptoms of eyestrain. It is obviously impossible to make a satisfactory and thorough refraction of all students in our larger universities, and in many smaller colleges ophthalmologists are not available. We know that it is possible for many students to carry minor refractive errors through years of close application of the eyes without symptoms. I think most ophthalmologists are agreed that such students do not need to wear glasses. This applies particularly to those who are hyperopic and have a small amount of hyperopic astigmatism. Students who are myopic, of course, need glasses in order to give them more distinct vision at a distance. It is also believed by many ophthalmologists that the progress of myopia may be retarded or arrested through the constant wearing of glasses which give adequate optic correction. In some institutions, surveys have shown that students who were myopic were not handicapped, but, as a rule, stood in the upper third of the scholastic zone. One explanation for this is that students who are myopic are not adapted for outdoor exercises, are somewhat reticent in participating in extra-curricular affairs because of the necessity for wearing glasses and consequently devote more time to their studies.

The coincidence of refractive errors and muscular anomalies of the eye has, in the past, been considered a concomitant affection which can be corrected by the use of glasses. The fallacy of this situation, however, will be apparent to all who reflect upon the ontogenetic development of the eye and adnexa. The functioning part of the eye has developed from neuro-ectoderm, while muscles and other appendages of the eye develop from the mesoderm. Each has its own directing factor, and a disorder of ocular motility may arise without organic defect of the eyeball, or an organic defect of the eye may exist without disturbance of ocular motility. The association of seeing and ocular movements is in itself a co-ordinated function which is only partly influenced by the use of corrective glasses. Non-medical examiners of the eye who attempt to detect and correct ocular defects are likely to fall into error through

ignorance of this association and the factors which influence it. Examinations by incompetent persons with the consequent prescription of corrections which are only partly effective, without an understanding of the complete picture set up by the syndrome of eyestrain, constitute one of the great health hazards in the commercialization of glasses. Tests that are made by means of instruments that detect anomalies of certain functions are useful aids but may be misinterpreted and undue significance attached to certain types of results. Unfortunately, not all medically trained men are sufficiently skilled or experienced in disorders or diseases of the eye to give balanced consideration to the results of these tests, and an apparent division of opinion among medical men leaves an opening for commercial propaganda.

Illumination

There is only one other line of endeavor of which I wish to speak and which may be seriously considered by this Committee. That has to do with illumination. We do not have definite information as to what permanent effects may follow the use of the eyes under improper lighting conditions, but we do know that glare induces nervousness, irritability and fatigue and we believe that the same symptoms may be brought about by work under inadequate illumination. The eyes are much more adaptable to insufficient illumination than to glare, and for short periods of time eyes may be used under conditions that vary a great deal from the normal. The conditions under which students work in their rooms and in libraries, in laboratories and in shops, could well be the subject of an intensive survey. Recent issues of pictorial magazines reveal students working in small rooms lighted only by exposed electric lamps hanging suspended from the ceilings on long cords, or by desk lamps from which glaring light is reflected from the paper to the eyes. Usually the poorest lighting is to be found in the students' libraries and in laboratories where they must work at painstaking reading, drawing or dissecting for many hours a day.

The symptoms of eyestrain of students come from a number of sources. They certainly do not all come from errors of refraction. Examination confined to the eyes certainly will not reveal in all cases the fundamental basis of their complaints. I think, therefore,

that it becomes an important part of the student health division to inquire into the conditions under which the students live and work. An ophthalmologist should obtain and consider information concerning an environment necessary for an adequate evaluation in any particular case. The student health records, in addition to the data obtained on physical examination, should contain information on the students' diet, habits and living quarters. All students who have symptoms or complaints referable to the eyes should be examined in the light of this complete information.

The Fifteenth International Ophthalmological Congress

Park Lewis, M.D., F.A.C.S.

AS a prominent participant in the Congress, Dr. Lewis gives a vivid account of its accomplishments, skilfully re-creating the atmosphere of the Egyptian setting.

THE Fifteenth International Ophthalmological Congress, held in Cairo, Egypt, December 8–15, 1937, was one of special interest to the readers of THE SIGHT-SAVING REVIEW. On the invitation of the Egyptian Government, the following had been appointed by the Secretary of State, with the approval of the President, to represent the United States at the Congress: Dr. Harry S. Gradle, director of staff, Illinois Eye and Ear Infirmary, Chicago, Ill., chairman of the delegation; Dr. E. V. L. Brown, professor of ophthalmology, University of Chicago, Chicago, Ill.; Dr. Frank E. Burch, professor of ophthalmology, and Dr. Henry P. Wagener, associate professor of ophthalmology, University of Minnesota, Minneapolis, Minn.; and the writer.

As at the Fourteenth Congress, held in Madrid four years before, the prevention of blindness formed an essential part of the official program. Its importance continued to be recognized in this later international meeting. The gathering was one of great brilliancy. The initial meeting was opened by the young King Farouk in the hall of the ancient Egyptian University. In this splendid building was gathered a large, representative audience, including delegates to the Congress, Egyptian physicians, and others interested in the proceedings. On the left side of the stage were the representatives of the government, picturesque in their red fezzes, while on the

right, filling the stage for several rows, were delegates from the countries represented.

Opening of the Congress

At precisely 10 A.M., the King and his suite entered the royal box. He was acclaimed with the audience standing. With His Majesty were the various princes, Mohamed Aly Ibrahim, Mohamed Ali Halim, Ismail Daoud, the Nabils Soliman Daoud, Mansour Daoud and Abbas Halim, Mustapha el Nahas Pasha, the Prime Minister (who has since been deposed), Said Zulficar, and Ahmed Hassanein Pasha with his aides-de-camp. To the left of the royal box were the cabinet ministers and ecclesiastical dignitaries, while in the boxes immediately facing the King were the British ambassador and other members of the diplomatic corps, together with many prominent Egyptians. On the platform were: Abdel Fattah el Tawil, Minister of Public Health and president of the local organizing committee; Dr. Eisa Hamdy el Maziny Bey, technical chairman of the Congress; Professor J. W. Nordensen, of Stockholm, Sweden, president of the International Ophthalmological Council; and the delegates from the various countries represented. A touch of color was given to the dark morning clothes of the European delegates by the red academic robe worn by the rector of the University of Edinburgh, Mr. Sinclair, who spoke in place of Sir Duke Elder.

After the King had formally opened the Congress, the Minister of Public Health thanked King Farouk for his attendance and patronage, which were evidence of his interest in science and in savants. Speaking for the Government, he expressed himself as pleased and proud to welcome the delegates and hoped that their participation in discussions with the Egyptian ophthalmologists would lead to a solution of scientific problems and to a lessening of the ills of humanity. He considered that the selection of Cairo as the place of meeting for this year was a proof of appreciation, on the part of the Congress, of the work of Egyptian ophthalmologists and the Egyptian Government in their combat against trachoma and the eye diseases prevalent in their country.

Dr. Nordensen, in an eloquent address in French, thanked His Majesty for his attendance at and patronage of the Congress. He

spoke of Egypt as the cradle of science, and of the more recent work done by the successive Egyptian Governments, and under the present royal dynasty, to combat eye diseases. He thanked His Majesty for his interest and hoped their deliberations would have every success.

After saluting all those present, King Farouk left and the proceedings continued under the presidency of the Minister of Public Health.

The next speaker was Dr. Eisa Hamdy el Maziny Bey, Director of Ophthalmic Hospitals in Egypt and technical chairman of the Congress. Maziny Bey expressed his gratitude to the King for the support of the ophthalmic measures taken for the control of eye diseases in Egypt, and particularly of the advances made under the rule of his father, King Fuad the First. Indeed, it was through the inspiration of the former king that the invitation was extended to the Congress to meet in Egypt, and every measure was taken under the direction of the present King to add to the comfort and convenience of those who were in attendance. While it was not mentioned by Dr. Maziny Bey, the fact was that a very large appropriation had been made by the Government for the entertainment of the guests; special reductions were made in railroad fares; and free entrance to all the museums and other privileges were accorded. A reception which was given by the King later in the week was most elaborately planned.

American Representative's Address

The delegates from the various countries then responded to the address of welcome, each in turn. As vice-president of the International Association for Prevention of Blindness, and delegate representing the United States, the writer made the following response to the address of welcome by Fattah el Tawil, Minister of Public Health and president of the local organizing committee:

"Your Excellencies: I speak for the delegates appointed by the American Government to represent the United States at this the Fifteenth International Ophthalmological Congress. We thank you for the generous reception that you have accorded us and we bring to you greetings.

"We come also with a gift that we beg you to accept as from our

people to yours. It is a gift that we regard as the most precious thing that we possess and that we have to give. It is a gift of our friendship. Our native Indians say, 'A gift for a gift.' May we not bring back to America a like gift from your people and your Government to ours?

"We look upon this country as the fountainhead of the most ancient civilization. It is at the crossroad of the world. Egypt is the interpreter of the East to the West and of the West to the East. When Egypt speaks, all of the Orient listens; what Egypt says is heard to the farthest boundaries of the most western lands.

"We come to you with modesty and with some trepidation. You, who have taught the world so much, what lessons will you have for us who have come from the ends of the earth to get new knowledge? We of a newer and younger country have the feeling that the soldiers must have had when, pointing to the pyramids, Napoleon said, 'Forty centuries are looking down upon you.'

"It is singularly appropriate that this International Congress should be held in the Egyptian University, the most ancient in the world. It is fitting also that the initial session should be opened in this splendid hall, wh ch is an example of the latest modern architecture. It symbolizes the attitude of your nation today. You retain all that is great in the old, but your arms are open to all that is best in the new. Especially are we rejoiced to know that blindness is being steadily diminished in your land.

"May we learn at this Congress not only to save the world from the blindness of our physical eyes, but, from the touch of the hands and the deeper penetrating gaze into each other's hearts, learn the friendship and the good will, each for the other, that lie there. We offer you our most sincere congratulations on the scientific and sanitary advances that you have made under your late king and we look forward to the still greater achievements that may be expected under your new ruler, the young King Farouk. May we express the sincere wish that the reign of His Majesty may be a long and prosperous one, and that under his rule may continue to live a happy and a progressive people!"

Continuing, Dr. El Maziny Bey said that since the accession of His Majesty, the late King Fuad, to the throne, in 1917, a revival and advance in all departments of life had begun, especially in those leading to the prosperity of his subjects. One of these projects was the care for the sick, particularly those affected with eye diseases, which are so widely spread among the poor inhabitants of this land. As a proof of encouragement to science the late king had given

orders that one of the ophthalmic hospitals (that at Giza) be given His Majesty's name and another hospital (that at Rod el Farag) be given the name of his eldest daughter. Both of these he honored by attending their opening in person—the first in 1926 and the second in 1929. This epoch was marked by great ophthalmic progress throughout the country, the number of ophthalmia units increasing during his reign to 109. In 1936, through these measures, 1,133,599 new patients were examined in the Egyptian ophthalmic hospitals, 344,661 operations were performed, and the out-patient visits reached 7,741,226. This had a great effect in reducing the number of the blind in Egypt, for the percentage of blind among new patients in the ophthalmic hospitals dropped from 17.4 per cent in 1910, to 5.63 in 1936.

Under the progressive influence of King Farouk, a large appropriation has been made by the Egyptian Government to improve the condition of the peasantry. The people will be educated to higher standards of living. Projects are already under way for the installation of clean drinking water and sanitary appliances in every home. This will prove to be an ultimate economy, making less necessary the continued building of additional hospitals.

On behalf of the oculists in Egypt, he welcomed the guests, who came from all over the world, to bestow on them the fruits of their experience and to see the extent of the endeavors in the fight against eye diseases in Egypt. He then welcomed by name the representatives of the different countries: Professor Lohlein, representative of Germany; Professor Marquez, who was the president of the Fourteenth International Ophthalmological Congress, held in Madrid; Mr. Sinclair of Edinburgh and the writer speaking for the English-speaking nations; Professor Bardelli of Florence, for Italy; Professor Koyanagi, for Japan; and Professor Szymansky, the former president of the Polish Senate, who spoke for the other nations.

The reception given by the King on the evening of December 10 was most elaborate and beautiful. A long stairway led to the palace corridor, on each side of which were guards in the Egyptian uniform standing at attention. These guards were stationed through the immense hallway leading to the reception room. The official delegates from the various countries were then shown into another

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hall, where they awaited a reception by the King. They were presented in groups by the representatives of the various embassies, and then all repaired to the theater, at which was given a play in Arabic, followed by an opera with noted singers. The King remained during the entire performance, and afterward joined the guests in the refreshment room, where supper was served.

Prevention of Blindness Measures

On Saturday, December 11, the entire morning was given to the discussion of the prevention of blindness. The session was opened with a report of Dr. Bailliart, of France, president of the International Association for the Prevention of Blindness. The first part, presided over by the writer, was a consideration of the prevention of blindness in tropical countries, and the speaker was Dr. A. F. MacCallan, president of the International League for the Control of Trachoma. Those who followed were Dr. Sadek of Egypt, Professor Toulant of France, Professor Weve of the Netherlands, and a number of others. The second portion was the prevention of blindness from a social viewpoint. The report was opened by me as vice-president of the association, and the speakers included Dr. Bailliart, Professor Marquez, Dr. Maziny Bey, and Mr. Lewis H. Carris, managing director of the National Society, who gave a report prepared jointly with Mrs. Eleanor B. Merrill, associate director. This report, it may be said, was of exceptional value and was accorded much appreciation. Another valuable and interesting presentation at this session was a report on the prevention of blindness by Dr. Sushii Kukherjee from Calcutta, India, illustrated by an excellent motion picture film which is used for the popular education of the natives.

The discussion of the reports was of such general interest that while Dr. Alvaro from San Paulo, Brazil; Dr. Barriere from Uruguay; Dr. Cassimatis from Egypt; and doctors from Poland, India, Great Britain and other nations, were able to speak, the hour for closing the session had arrived before a number of others could be given the opportunity to be heard.

Various excursions were provided for the ladies during the sessions of the Congress, these being so arranged that time was left for visits to the mosques, the bazaars, the Coptic churches, the

monuments, and other points of great interest which are found everywhere throughout Egypt.

The Thirteenth International Ophthalmological Congress at Amsterdam was the first in which there had been official recognition of preventive measures as an essential part of the work of the ophthalmologist and one of his responsibilities. At the close of that Congress, Professor van der Hoeve invited those present who were interested to remain after the Congress. It was then proposed that two groups should be formed, one for the control of trachoma, which is the most serious menace to the eyes of those living on the littoral of the Mediterranean and throughout the Near and Far East, and one for the prevention of blindness: the first organization, under the presidency of Professor de Grosz of Budapest, whose experiences in trachoma had been extensive, and the second under that of the late Dr. de Lapersonne, for so many years the dean of ophthalmology and professor of ophthalmology at the Hôtel Dieu. At the meeting in Madrid official recognition was taken of preventive measures in placing these studies prominently as a part of the work of that Congress. Dr. MacCallan, who for 20 years had been the head of the ophthalmic hospitals in Egypt, replaced Professor de Grosz, and Professor Bailliart took the place vacated by the death of Dr. de Lapersonne.

It was specially important that there should be a recognition of living conditions in an area such as Egypt, over which such an extensive amount of eye disease prevailed. Dr. Maggiore has shown in the past that environment has much to do with the propagation of such an infection as trachoma. Some time ago he told of the seaport of Bari, with a population of 150,000. It has an old and a new part, the old town being largely given over to a maritime population, living in crowded and unclean habitations, and the new city being under modern sanitary regulations. Although the children in both sections are submitted to the same general treatment, the amount of trachoma in the crowded and unclean section is twice the amount that it is in the newer and more sanitary part.

Excursion to an Egyptian Village

With the thought of learning something of the living conditions of the native Egyptian villagers, a little visit was undertaken to

the village of Bahtim, which to the writer was perhaps the most interesting of the excursions taken. Bahtim is located 15 or 20 miles from the Giza Laboratory, in which much valuable work has been done under the direction of Dr. Wilson. In company with and through the courtesy of Dr. and Mrs. Wilson a special visit was made to this village. The other guests included Mr. Sinclair of Edinburgh, Dr. Phillips Thygeson, who is so well known for his work on trachoma, both in this country and in Egypt and Tunis, and Dr. Polk Richards of the United States Public Health Service, who for many years has been in charge of the eyes of the Indians.

Egypt is a land of villages. Aside from two great cities, Alexandria and Cairo, there are few large centers of population. One village is, therefore, typical of all, and the Egyptian fellah, the agricultural laborer, is living under much the same conditions as those under which his ancestors lived for 3,000 years. The houses are made of dried mud, usually one story high, and covered with matting, corn-stalk fibers, or straw. These are packed together along narrow streets, parts of the house being open to the sky, there being practically no rain in upper Egypt. The sleeping rooms for the major part are without windows, the only air and light being that which enters by the door. In one such room a low doorway led into a small room, perhaps 10 by 8 feet and about 6 or 8 feet high, on the farther side of which was the native clay stove. On this stove five persons slept at night; the nights in Egypt are often quite cold. A little court, perhaps 5 feet wide, led into this house. Access to the roof was obtained by a log or tree trunk sloping up at an angle of about 45 degrees. As we entered, a man was walking down this incline in his bare feet; following him was a cock, whose way was being contested by a goat which was on its way to the roof. The cock eventually gave way and the sure-footed goat went to the top. He was then immediately followed by another goat. The ready access of animals to this matted roof would account for a condition that would be unbearable were it not for the dry atmosphere which causes the ordure to be partially evaporated. Leaving this courtway, we encountered a boy delivering milk. A look into the jar in which it was carried made evident that it was unclean.

A school in the center of the village was of stone with a stone floor. It seemed chilly and damp, coming in from the fresh open

air of a December morning. The room was filled with bright-eyed intelligent children. Arabic lessons were written on the blackboard. The children immediately responded when we held up our fingers for them to count. They answered in Arabic and, we were told, correctly.

We then went to the clinic room, in which were seated about 20 women holding their children, ranging from one to five years of age, on their laps. The children were brought daily for treatment of their eyes. The mothers and babies become tired of the routine, so they are kept coming regularly by being given a little bribe. After his treatment, every child receives in each hand a millieme, in value about half a cent, which, the doctor observed, would buy him his breakfast. We were informed that the ophthalmias, the inflammations that come from ordinary infection, were controlled by these daily treatments, but that trachoma was not affected, that it went on and on and would continue for a course of years. Trachoma is now generally recognized as an infectious disease caused by a filtrable virus. It is not, therefore, a matter of surprise that, as Dr. Wilson told us, 100 per cent of the children have trachoma. One would rather expect, if it were possible, that there would be more.

As we left to go to our cars we were unable adequately to clean the ordure from our boots. We each of us, therefore, had a native scrape the boots with his knife until they were in decent condition. It occurred to us that if there could be put in these villages, or in some one of them, as an object lesson, a model school, supplied with plenty of good clean water, which could be secured by drilling about 8 feet, it would then be possible so to use the moneys for the control of eye diseases as to give more effective results.

Under these conditions we may easily understand the rather hopeless conclusion reached by Dr. Wilson, who says in a report of 1935:

"I cannot say that children are more susceptible to the acute ophthalmias than adults, but they are certainly more likely to become infected. As regards the peasants of Egypt, who, as we have already noted, form the bulk of the population, I am safe in saying that few, if any, of the children reach the end of the first year of life without having had an attack of acute ophthalmia, and certainly none reaches the end of the second year.

"Children are sometimes affected even from the first month of life, and at the age of three months not a single normal conjunctiva is found. This lamentable state of affairs is doubtless due to the ignorance, the apathy, and the superstition of the people, and to the almost complete absence of sanitary conveniences. Hence the magnitude of the problem of prevention. In Bahtim 100 per cent of these babies had trachoma."

The weather during the Congress was excellent. Every convenience was afforded for facilitating travel, and altogether the Congress was noteworthy in extending throughout the world work for the conservation of sight and the prevention of blindness.

This report must not be closed without a word of appreciation for the unremitting courtesies extended by the representatives of our Embassy and Consulate in Cairo. In response to the direction of the Government at Washington, they rendered every assistance possible, and their personal aid outside of their official requirements is a delightful remembrance of our visit.

Conserving the Eyes of Youth*

Charles A. Perera, M.D.

AN elementary discussion of the care of the eyes during the prenatal stage, infancy, and childhood, with a consideration of such defects as cross-eyes, and a warning against dangerous toys.

WE are likely to underestimate the value of one of our most precious possessions, our eyesight, unless some unfortunate experience teaches us a lesson. Unknowingly we expose our eyes and the eyes of our children to dangers which are avoidable. Much unnecessary suffering and loss of vision can be prevented by an understanding of some of the principles concerned with the care of our children's eyes. Through the efforts of the medical sciences and such organizations as the National Society for the Prevention of Blindness, countless eyes which would have become blind only a few years ago are now saved. Diseases are being wiped out, and hazards are being eliminated from schools and industries. Still more can and must be done to prevent the needless loss of sight which is still taking place. Only through the closer co-operation of you, my radio listeners, with your medical friends and advisers can the sacrifice of the eyes of youth be ended.

It is important to realize that the eyes are a part of the whole body and may be affected by diseases which originate outside of the eyes themselves. Dimness or loss of vision is a symptom of many bodily disturbances and should always be investigated by a physician. Many persons complaining of failure of sight need glasses, but a careful examination by an eye physician may disclose the presence of some serious sickness of the eyes, brain, kidneys, blood, or some other illness requiring medical supervision. Only too often do we expose our organs of sight to needless hazards when

* Radio talk under title of "Conservation of Vision," given over WOR and Mutual Broadcasting System network on Friday, January 14, 1938.

we allow them to be examined and treated by persons who have no medical training in the care of eyes.

Prenatal Care an Eye Health Measure

The care of our children's eyes must begin before the time of birth. Every pregnant woman should see her physician and have a thorough medical examination long before her child is to come into the world. The ravages of syphilis can be reduced and many blind eyes saved from darkness if we only make use of the knowledge which scientists have painstakingly gathered together. Our great nation is still behind many others in eliminating this disease. Compulsory blood tests before marriage and at the commencement of each pregnancy would reveal the presence of this curable illness. Adequate treatment, begun immediately, would virtually eradicate congenital syphilis and its involvement of the eyes of children. Great strides have been made in this direction by public health authorities, medical organizations, and lay groups, but much remains to be done. You can help by discussing the problem with your doctor and friends. As soon as the public understands the factors concerned, and co-operates more fully, our goal will be in sight.

Eye Care in Infancy and Childhood

The severe inflammation of the eyes of newborn infants, known as "babies' sore eyes," is due to infection by germs getting into their eyes at birth. Many of the blind adults of today owe the loss of their sight to this disease, which is curable if treated in time. Treatment of this infection in the expectant mother, and the use of prophylactic drops in the baby's eyes immediately after birth, have done much to reduce this cause of blindness. Ignorance and neglect must be fought to wipe it out. Mothers should realize that babies with swollen, discharging eyes should be taken to the physician at once. They should know that the discharge from the infant's eyes is highly contagious, and that an adult's eye infected with these germs is in grave danger. The infection may be spread through towels, handkerchiefs, basins, and clothing. Prevention of this disease is vastly more effective than efforts at cure, once the child's eyes are involved.

Red, inflamed eyes in children or adults may result from infection on the surface of the eyeball or from disease inside of the eye. A physician should be consulted as soon as possible. Much damage may be done by postponing treatment of a serious eye condition in the hope that it will pass away by the use of eyewashes.

The vision of every child should be tested before entering school. If the sight of one or both eyes is subnormal, the child should be brought to a physician. This applies also to a child who complains of symptoms of eyestrain, such as headaches, tired feeling in the eyes after near work or movies, and smarting and burning sensation in the eyes. The sooner treatment is begun, the better the chance of improvement. Glasses may be prescribed for constant use, or perhaps only for close work. Some people still believe that it is harmful to wear glasses and that wearing them will make their children need them always. This notion is altogether wrong. The physician trained in the treatment of eye troubles will order glasses for a child only to improve the eyes and to prevent harm which cannot be later repaired. In many cases glasses are prescribed for constant use by youngsters so that they will not be needed for all-day use when the child is older and wishes to go without them in the street, while at play, and at social functions.

In some eyes defective vision is due to a scar in the back of the eye. Glasses will not help these cases. This is also true of some normal-appearing eyes which have never developed the power of keen vision. Parents and teachers sometimes cannot understand a doctor's report that a child's defective sight cannot be improved by the wearing of glasses.

Eyestrain

An important factor in the production of eyestrain is poor lighting in homes and schools. The increasing use of artificial light and the necessity for doing near work with the eyes in the evenings make us realize that good lighting is necessary to prevent damage to the eyes. Lighting engineers and eye physicians have been working at this problem for years, and they have determined the amount of illumination required for different types of work.

Some parents are very ambitious for their children, and make them do so much extra work involving the close use of the eyes that

the youngsters do not have enough time to get out of doors and play. Curiously enough, this sort of thing often takes place in families with nearsighted children, who need more outside play and athletics and less inside reading and studying. Nearsighted boys and girls frequently prefer to bury their noses in books rather than to get out in the air; excessive near work with the eyes in such children should be avoided.

Poor reading habits may strain the eyes. Reading matter should not be held too close to the eyes, nor should the common habit of reading while lying down and leaning upon the elbows be permitted.

The many sight-saving classes are providing an opportunity for children with poor vision to obtain an education without straining their weak eyes. Many of the children who are to be found in these classes had their eyesight impaired by preventable diseases and accidents.

Cross-Eyes

Children's eyes which turn out or are crossed require immediate and careful examination by the eye physician. Neglect of this will reduce the possibility of obtaining a perfect cure. A few cases of turned eyes have paralyzed eye muscles; most of them are caused by overacting or underacting sets of eye muscles. After a thorough study of the movements of the eyes and a test of the child's vision with the use of drops, glasses will usually be prescribed. Eye exercises may be employed in addition, to improve the vision and to help make the eyes work together properly. In many cases these measures result in straightening the eyes; in the remaining cases, operation upon the eye muscles may be necessary. With modern surgical methods, there is no danger to the eye in these operations. We no longer wait to see whether the child will "grow out" of his crossed eyes; this happens only very occasionally. Physicians now advise operation when needed, preferably before the child enters school. For the imbalances which develop after the kindergarten age, surgical correction is indicated as soon as it has been demonstrated that medical measures alone are not sufficient.

This brings me to a subject that is not directly concerned with vision, but which is of great importance to our children—the influence of facial disfigurement, especially involving the eyes or lids.

Children are frankly outspoken and unknowingly cruel to their unfortunate playmates with an unsightly eye, or a lid droop, or a crossed eye. The mental damage thus inflicted upon some innocent little sufferer may change his personality and take away much of the happiness which is the right of every child. Excessive timidity and bashfulness, the desire to withdraw from the society of his fellows, and inability to meet the problems of life may result. Some of these children become problem children, often being pugnacious or self-assertive in their efforts to compensate for their deformity. In these days of keen competition for employment, appearances count for a great deal. The risks involved in the correction of most of these disfigurements have been so reduced by modern surgeons that we parents are doing our children a grave injustice if we do not take measures to make our youngsters feel that they look like other children.

Eye Accidents

Accidents in the home or during unsupervised play form a large proportion of needlessly lost eyes. A small speck or cinder in the eye is a frequent occurrence. This apparently trivial injury may lead to ulceration and scar-formation as a result of infection from misguided attempts to remove the foreign body by a corner of a dirty handkerchief, or by using a pointed toothpick or some such object. If the foreign body is not easily washed out by a gentle irrigation with a boric acid solution, or is not easily removed from beneath the lower lid by a wisp of cotton, the patient should be taken to a physician. This is especially important in the case of specks imbedded on the front of the eyeball.

Injuries to the eyes should be treated by covering with a sterile dressing applied without pressure, and immediate consultation with your doctor. Careless treatment of the injured eye before medical attention is obtained may cause further damage.

The best treatment for eye injuries is to prevent them from happening in the first place. The prevention of eye accidents is relatively simple if only parents would stop and think over the principles that are being used to protect the eyes of workmen in factories and machine-shops. Eliminate the hazards and the number of accidents will be reduced. Think twice before letting the small child

play with something that may injure his eye or the eye of a companion. Sharp-pointed scissors and pocket-knives should be allowed only when the youngster is old enough to understand how to use them. Children carrying pointed instruments should be taught to hold them point-down and far from the face. Devices which explode or hurl a projectile—such as darts, arrows, slingshots, cap pistols, and air rifles—are frequent causes of eye accidents. A boy should not own a BB gun until he has mastered the caution and care necessary in handling a real rifle or shotgun. Several recent accidents in which an eye was destroyed by a BB pellet occurred among groups of boys deliberately shooting at each other while playing "cops and robbers" or some such game. Parents must not be blind to these dangers to their children's eyes.

Regularly, every year, we see the little victims of Fourth of July accidents, even in communities where it is illegal to sell fireworks. Some well-meaning but ignorant parents, usually the fathers, I admit, actually go out of their way to break the law and endanger the sight and health of their young sons and daughters. It seems impossible to teach some people the dangers in exploding firecrackers or torpedoes until one of their children has lost one or both eyes, or is burned in some other part of the body. No variety of fireworks is harmless; even the supposedly safe "sparklers" can cause serious burns.

In my preceding remarks I have called attention to some of the ways by which a child's vision can be saved. Prevention of trouble is very much to be preferred to repair of the damage caused by neglect or ignorance. Think of your children and be reasonable.

Miss Linda Neville—Kentucky Sight-Saver*

Emma Bugbee

THE story of the personal efforts of an inspired woman, whose achievements in sight conservation are outstanding in her native state.

MISS Linda Neville—just "Miss Linda" to the home folks in Lexington, Ky.—had to choose recently between adopting Tiny David, a blind baby whom she had come to love, and continuing the state-wide work for the blind which she has been carrying on for more than thirty years.

Tiny David is an orphan and almost totally blind, but he has red curls and an ingratiating personality. Miss Neville had him in her home for many weeks, as she has had other afflicted children from time to time, but David was the only one she ever wanted to adopt. She realized, however, that if she continued lavishing so much time upon him she could no longer attend to the problems of other blind children, most of whom might be saved.

She told about taking him to the Arthur Sunshine Home and Nursery School for the Blind in Summit, N. J., where he will be reared.

"Tiny David already has been the means of saving other babies from blindness," she said. "I used to take him with me to hearings before the legislature and to public gatherings, where his charms stirred people's hearts as no amount of statistics would have done. I only hope that when he is an old man, preventable blindness will have disappeared from the country, and he will be able to rejoice that in his tiny way he had a share in that great work. Perhaps then he will forgive the generation that could not save him."

Tiny David's fate seemed doubly tragic to Miss Neville because

* Interview reprinted from the *New York Herald Tribune*, October 25, 1937.

"Miss Linda" and Tiny David

it is so rare even now for her to find a baby who cannot be aided by medical or surgical skill.

In the early days of her work she used to go out herself into the mountains and bring the babies to town, riding over the trails on muleback. Now, most of the arrangements are made by telephone. "Long distance, Miss Linda," announces her maid-of-all-work. That means the sheriff in a remote valley, perhaps, has learned of another infant whose eyesight is in peril and wants to bring it to Miss Neville.

Her house is always full of such forlorn guests—babies awaiting treatment in a hospital, babies recuperating from an operation, children whose young eyes are seeing for the first time the colors of patchwork quilts and the flowers on the bedside table.

Miss Neville runs what her friends call "a one-woman settlement house." She herself asserts smilingly that she never knows what she will find on her front doorstep. Once it was two babies in a corrugated paper box; once it was a tatter-clad child whose mother muttered, "This is Ninnie," and then bolted. Miss Neville welcomes them all, feeds them and pays part of their bills from a slender account called the "mountain fund" raised by charitable folks of Kentucky.

More than 700 have thus been rescued in the years since she started single handed to relieve the suffering from trachoma in the mountain regions of her native state. Now that particular scourge has been almost eradicated. Four hospitals under the United States Public Health Service have been established in the mountains. Other forms of blindness, however, are still prevalent, not only in the mountains, but in the cities and larger towns.

Miss Neville, still an individualist, makes every blind baby in Kentucky her personal charge, but now she has the authority of the state government behind her. Her tiny clients receive special rates in hospitals, free passes on the railroads and the state itself contributes $2,000 a year for their care. Any physician or surgeon meeting "Miss Linda" on the street, is likely to get an assignment to treat one of her guests, and none has ever been known to decline.

"The Angel of Kentucky" she was called by Dr. Arthur T. McCormack, of Louisville, president of the American Public Health

Association, at the final session of the recent convention of the organization here.

"Miss Linda" was induced to tell how all this began as she sat in the office of the National Society for the Prevention of Blindness, Inc., 50 West 50th Street, a few days after her trip to Summit.

She had been a young school teacher, still conscious of her Greek and Latin, she related, when she had once gone on a holiday up into the mountains to visit a friend who had organized a mission school. It was a beautiful day in early autumn, with trees clothing the mountainsides in scarlet and gold, she said, but on the school steps sat a young girl who could see none of that beauty. She was not the only one. Miss Neville had been twenty-four hours reaching the settlement by wagon and muleback, passing more than one cabin where a sightless person sat motionless on the squalid porch.

"What I saw that day hurt me," said Miss Neville. "I asked my friend what I could do to help, but I never thought then of a movement or society or legislation. I just couldn't stand it to think of those people going blind who could have been saved, they told me, had medical treatment been available for them."

A little later, she continued, back in her own home in Lexington, she heard of a man threatened with blindness, who lived far beyond the reach of any doctor. She begged her father to invite that man to come and stay in their home while he had hospital treatment. That was the beginning of her "one-woman settlement." Still later, she said, she made the acquaintance in New York City of the late Miss Louisa Lee Schuyler, philanthropist, who talked with her about forming a national organization to combat blindness.

"That was really the start of my work. But don't let's talk about me. I'm not important," said "Miss Linda."

What she likes to talk about is her guests—the blind boy who arrives barefooted and frightened by the noises of the strange city, clinging to the hand of father or mother, who somehow in their mountain home have heard that in Lexington is a lady who will help them. Once there was a boy who had walked twelve miles to reach her, frightened but determined. She kept him for weeks, and was rewarded when he left by hearing him say, "Now I aim to go a-fishin'."

"Miss Linda's" adventures with the legislature are another

chapter. She apparently is as persuasive with a committee as with a surgeon. For years she has appeared often at the state capital, seeing to it that her blind people are not neglected, that laws are enacted for their protection and relief.

"I never played politics though," she declared. "And I'd never tolerate it for any man to play politics with me. If anyone tried it"—she hesitated at the thought—"if anyone, any president or governor or senator or anybody at all did anything that wasn't for the good of my blind babies I'd—well, I just wouldn't stand it, that's all."

The Vision of the School Child*

Francia Baird Crocker, R.N.

EYE hygiene forms an important part of the school health program; a knowledge of the visual defects of children is of inestimable value to the teacher in understanding vision as a factor in class work and in behavior.

PROBABLY Pope, in his *Prologue to the Satires*, did not have teachers in mind when he wrote "explore the thought, explain the asking eye." But in counselling teachers it should be pointed out that if they would more fully understand a child's behavior, they should find out how much he sees—for vision exerts considerable influence upon how the child acts toward his parents, the teacher, and other children, and how he reacts to his surroundings. School physicians and nurses have frequent opportunities to point out that before rating a child's intelligence it would be advisable to determine if he sees accurately and quickly, so that he is not at a disadvantage in taking tests in which time and accuracy are factors in deciding the intelligence quotient.

One of the teacher members of the staff of the National Society for the Prevention of Blindness learned that the department of psychology in one of the state universities was giving paper and pencil tests to a group of children to establish their I.Q. ratings. Later the staff member had an opportunity to give 300 of the children in this group simple central visual acuity tests with a Snellen chart. Twenty-five of the 300 were found to have vision sufficiently defective to interfere with their ability to see critically and accurately the material used in the I.Q. tests. All 25 had been given low I.Q. ratings.

Poor vision may limit or interfere with school experiences in many other ways.

* Presented at the joint session of the Child Hygiene Section, Public Health Nurses, American Association of School Physicians, and the National Society for the Prevention of Blindness, October 8, 1937, Annual Meeting of the American Public Health Association.

The physician, teacher, and nurse, in striving for an intelligent understanding of the child, should fully comprehend and justly estimate for each child what are the normal changes in vision which may occur during the period of growth and development and what are the abnormal changes which may occur during this period.

It is evident that in order to plan ocular hygiene programs in the school it is necessary to understand the normal as well as the abnormal changes which occur. Even normal changes can influence the whole planning of school activities and grade requirements; the selecting of materials and equipment; the controlling of environmental factors; and the outlining of schedules for spacing periods of eye work. Such abnormalities as eye defects, disease, or conditions in general health affecting the child's vision should be recognized and removed or at least rendered more tolerable for the child.

In some school systems the entire school program for eye health is based upon whether the child is able to read 20/20 on a chart. Not much attention is paid to the kind of chart, whether it is one drawn according to the scale of Snellen measurements, or whether it is clean, and no universal attempt is made to make tests under consistent standards of lighting.

Eye Difficulties Among School Children

It is pretty safe to assume that the majority of school nurses, if asked what eye condition is most frequently found among elementary school children, would reply without hesitation, nearsightedness (myopia). But ask the ophthalmologist and he will tell you farsightedness (hyperopia). A further investigation indicates that the ophthalmologist's statement can be substantiated by research.[1] The most common eye difficulties found among elementary school children are:

1. Errors of refraction of varied degrees and seriousness, occurring in the following order of frequency: hyperopia, astigmatism, and myopia.
2. Failure of the two eyes to work together, arising from a variety of causes, and generally referred to as strabismus or squint.
3. Eye diseases affecting the different parts of the eye.
4. Congenital and hereditary eye defects.

There is probably no part of the school health program, in pro-

portion to its importance, that is hung on so fragile a thread of factual information as the program for ocular hygiene. This is true in spite of the importance of the visual mechanism and the exciting facts that are known about it—how sight is possible and how various parts of the eye perform their functions; the part that light plays in vision; and the relationship between the eyes and the rest of the body.

Present-day methods in education are so largely dependent upon the eyes—some authorities stating that more than three-fourths of our impressions come through the sense of sight—that there is a definite obligation for considering and appreciating the rôle that vision plays in the educational process and the effect it can have on the behavior of the child. If it were possible to perfect our tests of vision and to equip ourselves with testing materials which would enable us to see exactly the way a child sees when he has visual limitations—in other words, put ourselves in his place—how much better prepared we should be to interpret his actions and to help in directing his education.

A museum in New York City is planning to add to its exhibits in the near future a hall of animal behavior, which will, among other things, permit the visitor to view everyday scenes in the way in which they are supposed to be seen by different animals. The physiologic, the psychic, and the physical aspects of the vision of animals will be dramatically represented. One project is being designed to show how the dog sees. Lacking color discrimination, the dog sees everything as a pale gray. Brown, red, blue, and white details are missing in the dog's world. This is a physiologic difference between the eyes of the dog and those of the child, unless, of course, the child lacks color discrimination. "Color blindness" in the child may prevent him from entering certain occupations or may make him a menace in traffic when he grows older and learns to drive. If his lack of color discrimination is not discovered early, it may even be necessary for him to give up the profession for which he has prepared himself.

In the physiologic sense, deviations other than color blindness occur. There may be changes in the vascular system of the eye, in the metabolism of the eye, or defects in structure of the eye which impair its function. If such defects do occur, the child may see

things larger or smaller than they are and he is likely to be misunderstood when he reports to the teacher or his parents *what he actually sees*. Words may appear blurred or run together, making sustained attention difficult and, as a result, exploring the printed page becomes a tedious task rather than a joyful and satisfying experience.

Because of these defects in normal functioning, the child may be unable to see the blackboard and thus he misses many stimuli used by the teacher. These instances will serve to point out the need for a better understanding of at least the rudimentary facts about the eye—how the child sees—and what may happen if there is any interference with his vision.

In the museum's hall of animal behavior, another exhibit will show how psychic factors may be responsible for distorted vision. Among animals, the hen, because of psychic factors, sees things much larger than they actually are. Among school children, psychological differences may account for distortions in their art work. Various ophthalmologists have pointed out limitations imposed on individuals in the field of sculpture and painting when vision is affected. An illustration of the influence of psychic factors in painting can easily be found in the works of Van Gogh.

Fish see the fisherman on the bank in grotesque proportions. This is due largely to physical factors—the reflection of light and the refraction or bending of the rays of light. There are physical factors in the child's world which influence his vision. The intensity and the quality of light determine his acuteness of vision. His eye comfort and efficiency are definitely affected by inadequate illumination. Seeing is handicapped if glare (brightness in the field of vision) is present.

School Lighting Requirements

It has been demonstrated that it takes twice as long to see at three foot-candles of illumination as at thirty foot-candles. Yet how many children still have less than the minimum requirement of light on the working surface of their desks? Children with defective vision benefit under conditions of good lighting because it takes the defective eye longer to see than the normal eye. In any consideration of the vision of the school child, teachers, nurses, and

physicians should be informed at least as to what are the minimum standards of school lighting. How many school nurses know that since 1918 there has been a code of lighting school buildings, that the American Standards Association's rules of procedure were followed in preparing the code, and that an up-to-date revision of the code, *American Recommended Practice of School Lighting*, will be available in another six months. This bulletin will contain not only criteria of good illumination, but also helpful information concerning the control of school lighting, decoration of schoolrooms for securing best reflective values, and seating in relation to light sources and working surfaces.[2]

It is impossible to include in this paper more than a suggestion of the diseases and conditions which may affect the various parts of the eye and seriously impair vision. Diagnoses of eye conditions of children attending sight-saving classes are worth noting. Some of these are: albinism, choroiditis, congenital cataract, corneal opacities as the result of disease or injury, detached retina, interstitial keratitis, optic atrophy, phlyctenular keratitis, progressive myopia, and retinitis pigmentosa.

The nurse who understands the significance of eye difficulties, who has knowledge of the eye and a sensitivity to symptoms, has many opportunities for helping to prevent loss of vision. In many instances she may be able to prevent the occurrence of eye difficulties. Briefly, this can be done by participating in programs to prevent eye conditions brought about by syphilis, tuberculosis, local infections of the eye, focal infections, and injuries.

It is possible only to ask this question, since facts are not available for answering it. How many in the United States of the 114,000 blind persons and the thousands of other persons with partial vision could have had eyesight conserved if proper measures for eye care had been applied throughout their school life?

Vision of the Preschool Child

An eye health service, to be most effective, should be an integral part of the school health program. But planning for the preventive aspects of an ocular hygiene program which is directed toward conserving the vision of the school child, must begin with the preschool age group. A physical examination for the preschool child is be-

coming a regular part of his preparation for school. There is, however, a most important part of this service to the preschool child that is being omitted. More attention should be given to the detection of eye difficulties and their alleviation.

It is frequently said that the incidence of eye defects in the preschool group is negligible, and that the findings do not justify the time and effort involved. Many of these statements are opinions based on broad generalizations. What has been the experience of the National Society for the Prevention of Blindness? A study[3] made as long ago as 1925 indicated in the summary that "almost as large a percentage of children of the preschool age have eye difficulties requiring careful study by ophthalmologists as have children of older age groups. The only striking difference that stands out clearly in this study is the higher incidence of hyperopia (farsightedness) and the lower incidence of myopia (nearsightedness) in the preschool group."

The incidence of eye difficulties in the preschool group is approximately twenty per cent, based on this study, and the incidence of eye conditions in the school group has been found to be about twenty per cent, based on studies made of this age group.

Inspecting and testing the eyes of the preschool child require time and patience. The child's co-operation and sustained attention are necessary. A quiet room, small groups of children, preliminary instructions to the mother in what is expected, and practice at home in learning the different positions of the Symbol E—all make for more accurate results.

If a check list were prepared for scoring the activities in a school system which have to do with the vision of the school child, basic items would be included. These items merit at least brief mention.

Is there an eye health education program for teachers and nurses? Does the program include manuals for guidance regarding testing vision and recording of eye conditions; control of environmental factors; adjustment of classroom practices?

What are the facilities in the community for eye care and for general care for those diseases of general health which may affect the eyes?

Are there facilities for special education of visually handicapped

—both the partially seeing group and the blind—in public school classes, parochial schools, private schools, state residential schools?

Are the eye findings recorded? Is provision made for the following items: acuity of vision of both eyes; fields of vision; treatment advised, whether eye care or other; limitation of eye tasks; and educational guidance.

Realizing the importance of vision, and armed with what facts are available, we can widen the school child's horizon, enrich his visual experiences, and conserve his most useful possession—eyesight. This is a privilege that all of us should exercise freely. When physicians, nurses, and teachers realize the ocular hygiene needs, school children everywhere will be benefited. For in the words of the prophet Isaiah, "they shall see eye to eye."

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Editorial

The Growth of Sight-Saving Classes in the United States

WE celebrate this year the twenty-fifth anniversary of the establishment of sight-saving classes in America. The first of these special classes for school children with seriously defective vision was started in Boston, Massachusetts, in the spring of 1913, and a second class was started in Cleveland, Ohio, several months later. Today there are 571 such classes in 185 cities throughout the United States, including the District of Columbia and the Territory of Hawaii.

The idea of special methods for educating partially seeing children was brought to this country in 1909 by Dr. Edward E. Allen, then director of the Perkins Institution for the Blind, after visiting the myope classes in London. He persisted in his efforts until the public school authorities of Boston decided to inaugurate a class for children suffering from serious eye difficulties. The movement has grown steadily ever since.

Although classes of this kind existed in England and Germany before they were begun in America, we have gone much further. Not only do we have a larger number of sight-saving classes than any other country, but the pedagogic technique and the special facilities developed here have won recognition throughout the world.

In sight-saving classes, every child is taught the touch system on the typewriter as soon as possible so that the eyestrain of handwriting may be avoided. Books in large type are used, and much of the work is done on the blackboard. Adjustable seats and desks are provided, and particular care is exercised in regard to lighting arrangements.

Thousands of American children, through these classes, have received an education that would not have been possible for them under the usual conditions provided for the normally seeing. In addition, many of them have received guidance in the selection of

vocations which they are capable of pursuing, within the limits of their eye defects, and which will not increase their visual handicaps.

The steady growth in the number of sight-saving classes has created a need for teachers and supervisors who are trained in this special field; and an increasing number of states are requiring teachers to meet certain qualifications before they can be certificated.

For many years, the National Society for the Prevention of Blindness has co-operated with colleges and universities offering summer courses that provide such training. Four colleges gave courses during the summer of 1937, with a total enrollment of 120 students; and an even larger enrollment is anticipated for the courses scheduled at seven colleges and universities during the summer of 1938.

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

The Program of Prevention of Blindness as It Relates to Nursing

The National Society for the Prevention of Blindness has on its staff a registered public health nurse as associate for nursing activities, whose function it is to assist all groups of nurses in meeting the eye health problems with which they are faced. This is done through personal conference in office and field, through correspondence and through assistance in the selection and use of the Society's publications, and through aid in the development of community eye health programs. Services of other members of the Society's staff are also available to aid in special problems or projects.

To Instructors in Schools of Nursing

Teaching materials and devices, such as publications, slides, and films suitable for teaching eye hygiene to student nurses.

Consultation on methods of correlating eye hygiene instruction with other subjects in the curriculum.

To Nurses Who Have Administrative Responsibilities in Hospitals and other Institutions

Consultation on problems of eye hygiene related to staff and patients.

Information on lighting in relation to eye health and comfort.

To Private Duty Nurses

Information regarding eye diseases and defects and their relation to general health.

To Public Health Nurses Engaged in:

General Public Health Nursing

Information regarding normal growth and development of the eye and the relation of other health problems to eye health.

Assistance in correlating eye and social hygiene programs.

School Health Service

Information on the relation of vision to learning.

Guidance as to sources of standards in such problems as school lighting.

Consultation on methods of discovering eye health problems, such as vision testing, school lighting and seating, and other school equipment.

Interpretation of principles of sight-saving class practices.

Industry

Guidance as to sources of standards for lighting and the protection of eyes in industry.

Information on eye hazards in industry.

Suggestions for eye health programs in industry.

To Nursing Organizations (State and District Nursing Associations and Organizations for Public Health Nursing)

Assistance in planning programs related to eye health.

Exhibit materials and publications for use at meetings.

The Objects of the Society

1. To endeavor to ascertain, through study and investigation, any causes, whether direct or indirect, which may result in blindness or impaired vision.
2. To advocate measures which shall lead to the elimination of such causes.
3. To disseminate knowledge concerning all matters pertaining to the care and use of the eyes.

Note and Comment

3,500 Cases of Preventable Blindness!—Figures on eye injuries recently released by the Wisconsin State Board of Health show that eyesight has been lost to more than 3,500 Wisconsin residents through tragedies that for the most part could have been prevented.

Blindness at birth in Wisconsin has been almost eliminated since 1913, through the statute requiring the use of silver nitrate in the eyes of every infant at birth. A survey in 1934 revealed that less than one per cent of the State's known blind were under five years of age, eight per cent were from six to 20, 25 per cent were 21 to 49 years, 12 per cent were in their fifties, and 55 per cent had reached or passed 60 years.

The Board indicated that reading in poor light or under other circumstances leading to eyestrain, and allowing an inflamed condition of the eyes to go untreated, are common faults. Other leading causes are accidents, both in industrial plants and in the home. The former have been lessened through safety rules effective in shops, but the accident hazard to the eyesight of children persists.

Columbia University Gives Course in Illumination.—A course in the "Illumination of Buildings" is being presented at Columbia University during the spring term of 1938 for the second time. The course, which consists of lectures presented by practicing engineers, provides basic and technical information dealing with lighting problems and their solutions. The topics include: co-ordination of light and architecture; fundamental terms of illumination; lighting for seeing; incandescent and gaseous light sources; lighting standards; specifications and calculations; light control; electric service in the home; color in lighting; commercial, industrial, and residential lighting; stage lighting, decorative and exterior lighting; and modern trends and future possibilities in lighting.

President Roosevelt Approves Prevention of Blindness Law.—The President has approved an act (Public Law No. 58) providing for the prevention of blindness in infants born in the District of Columbia. The act devolves a duty on each physician, midwife, or other person in attendance on any case of childbirth to administer immediately on delivery a prophylactic against inflammation of the eyes of the baby, either a one per cent solution of silver nitrate or such other preparation as the health officer may prescribe. Whenever any physician, midwife, or other person in attendance on any case of childbirth finds that the baby has inflammation of the eyes, attended by a discharge therefrom, notification must be given in writing within six hours to the health officer, who may order the parents of the child either to place the child in the care of a registered physician or to submit immediately satisfactory proof of inability to pay for such medical services. If the health officer finds that the parents are unable to pay for such medical treatment, he must order the parents to place the child in a hospital to be designated by the Board of Public Welfare and at the expense of the Board. No person other than a registered physician is permitted to treat any case of inflammation of the eyes of a newborn child, attended by a discharge therefrom, for any period longer than may be necessary to obtain the services of a registered physician.

Lighting Requirements for Weaving.—The minimum number of foot-candles required for the various processes in weaving varies considerably, as is shown by the following chart:

	Minimum No. of foot-candles
Soaking and Fugitive Tinting	10
Winding	
On Swifts and Spools	25
Twisting	
On Spools and Bobbins	25
Conditioning or Setting of Twist	10
Rewinding and Coning	
On Spools or Cones	25
Quilling	
On Spools and Quills	25

	Minimum No. of foot-candles
Warping—Silk System	
On Creel	50
On Running Ends	50
On Reel	50
On Warp at Beaming End	50
Warping—Cotton System	
On Creel	50
On Beam	50
Slashing	
On Beam	25
Drawing-In	
On Heddles	100
On Reed	100
Weaving	
On Woven Cloth	25
On Heddles and Reeds	5
On Warp Back of Harness	10

From two to three times the values given should be considered the minimum when weaving cloth with colored threads is involved.

Indiana Requires Eye Examination for Drivers.—An automobile driver's license law which became effective in Indiana January 1, 1938, provides for an eye examination as one of the requirements for passing a beginner's test. Should the applicants fail to pass the eye test, they are rejected with the examiners' recommendation to consult optical experts.

Medal Offered for Work in Ophthalmology.—The University of Buffalo awards annually a gold medal for work in ophthalmology. Details may be obtained from Dr. Harold W. Cowper, 543 Franklin Street, Buffalo, N. Y.

Better Light for the Bull's Eye.—Improvement in the lighting fixtures installed in the Buffalo Rifle and Revolver Club has made a marked improvement in the scores of its members. For four matches played prior to the change in lighting, the scores were

1,239, 1,287, 1,259, and 1,260. After the lighting had been improved, the scores for the next four matches were 1,335, 1,329, 1,319, and 1,318. It is significant that the lowest score attained after the installation of improved lighting was several points higher than the highest score attained under the previous system of lighting.

Modern Views on Credé's Method.—A survey of 20 recent articles on Credé's method of using silver nitrate solution in the prophylaxis of ophthalmia neonatorum reveals that present-day doctors are not in complete agreement concerning the application of the method. In 15 of the articles the use of silver nitrate was recommended. In three it was considered ineffectual. In the remaining two articles the authors were non-committal as to the drug used, placing more emphasis upon the technique of administering the drug and the cleansing of the eye. In the vast majority of cases, one per cent silver nitrate was used instead of the two per cent originally recommended by Credé. Some of the substitutes for silver nitrate were silver acetate, alum, tannic acid, copper sulphate, zinc sulphate, bichloride of mercury, potassium permanganate, argyrol, mercurochrome, mercurophen, and many others. Several of the authors called attention to the fact that ophthalmia neonatorum includes not only those cases of gonorrheal origin but also many due to inclusion bodies, pneumococcus, streptococcus, staphylococcus, Morax-Axenfeld bacillus, and others. The end result from these non-gonorrheal infections may be just as tragic as those from gonorrheal infection.

Connecticut Bars Defective Sun-Glasses.—According to the Connecticut State Commission of Opticians, "effective April 1, 1938, sun glasses or goggles in which the glass or other materials used as the lenses produce distortion, are not matched in color or density, and which are not in a high degree of clearness or transparency, cannot be sold at retail in Connecticut."

Daylight Meter.—The photometry department of the National Physical Laboratory of London has perfected a meter which automatically measures the amount of daylight penetrating into rooms.

By means of two photo-electric cells the intensity of light in a room is compared with that of the sky vault. It is thus possible to tell at a glance how good or how bad is the lighting of a room. The daylight factor is beginning to be used extensively by the authorities in deciding on slum clearance schemes, for the instrument has the advantage of not being subject to errors of judgment on the part of the user. The minimum daylight factor considered suitable for working conditions is 0.2 per cent. In some of the Glasgow slums the factor is as low as 0.003 per cent.

Another apparatus is used for testing the sensitivity of the eye to colored light, with special reference to colored street lights. It has been suggested that the eye may work most efficiently by the light of some particular color. To test this theory a cinema film of a street scene was prepared in which various objects appear and disappear. This is projected on a screen by means of lights of different colors. The time taken by observers to notice the various objects is measured for the different colors.

Smoke in His Eye.—So far as is known to medical science, Alfred Langevin, a French-Canadian, is the only man in the world who can breathe and smoke through his eye. With his nose and mouth tightly closed, he can exhale and inhale through an anomalously patent nasal duct on the right side; and by means of a special apparatus, having a tube which passes down through this duct, with a nose-clip to keep it in place, he smokes cigars, cigarettes, or a pipe. Strong tobacco causes his eyes no irritation.

Significance of Colors.—The percentage of light reflection by factors of walls, ceilings, and window shades, registers largest with new white, which investigators of public health have found to be nearly 90 per cent. Buff reflects light up to 66 per cent; cream up to 80 per cent; light green up to 75 per cent, and dark green varies from 11 to 25 per cent. The reflection of light blue and pink is around 61 per cent. Yellow runs high but natural wood brown stains and wood varnishes are low in reflection.

Women Want Better Light.—Better lighting was found to be one of the most desired improvements in working conditions for

women, in a recent survey by the Northwestern National Life Insurance Company. The survey included about 2,600 "white collar" workers in 22 cities, and dealt with such matters as diets, career preferences, and working conditions. Among the women, poor light ranked second as a cause of dissatisfaction.

Examinations to be Given by American Board of Ophthalmology.—The American Board of Ophthalmology announces that in 1938 it will hold examinations in San Francisco, June 13, during the American Medical Association meeting; in Washington, D. C., October 8, during the American Academy of Ophthalmology and Oto-laryngology meeting; in Oklahoma City, November 14, during the Southern Medical Association meeting. A preparatory group has been established to furnish information and advice to physicians who are studying or about to study ophthalmology so that they may be eligible for examination and certification, after they have fulfilled the necessary requirements. Any graduate or undergraduate of an approved medical school may make application for membership in this group. Upon acceptance of the application, information will be sent concerning the ethical and educational requirements, and advice to members of the group will be available through preceptors who are members or associates of the Board. Members of the group will be required to submit annually a summarized record of their activities. Application blanks may be procured from Dr. John Green, 3720 Washington Avenue, St. Louis, Mo.

American Recommended Practice of School Lighting.—Sponsored by the Illuminating Engineering Society and the American Institute of Architects, and approved by the American Standards Association, the new "American Recommended Practice of School Lighting" has recently come off the press. In this new edition, the primary purpose has been to establish criteria of good illumination for the guidance of architects, engineers, school officials, and others interested in the conservation of children's vision and the efficiency of pupils and teachers. The edition has been materially enlarged to include sections on the vision problems confronting students and

teachers; the factors that affect seeing and lighting; the problems involved in a natural and artificial lighting of schoolrooms; how and when natural light may be augmented by artificial light under varying weather conditions; and the matter of adequate wiring.

Single copies of the new recommendations are priced at 25 cents each, with quantity prices obtainable on request from both the Illuminating Engineering Society, 51 Madison Avenue, New York City, and the American Standards Association, 29 West 39th Street, New York City.

The Greeks called it "Strephosymbolia."—Reading disability which occurs even among children of normal vision and high intelligence may often be due to "strephosymbolia," a word meaning "twisted symbols," because the afflicted person distorts or twists the arrangement of letters which form a word. Children so affected are not word-blind. They see the word on the printed page, but are unable to recall the mental picture of the word which they have just seen. No entirely satisfactory explanation for the existence of strephosymbolia has been put forward. It has been variously blamed upon emotional disturbances, upon a general indifference toward all forms of school work, upon lack of harmony between teacher and pupil, and upon faulty home training. It is probably aggravated in some degree by the sort of fear neurosis which may develop in a child who is anxious to succeed but lives in constant anticipation of failure.

Children revealing this tendency can often be cured by making use of their normal development in spoken language and by teaching them the phonetic values of the printed letters and the process of blending such letters in sequences.

Money Burned is Money Earned in Mining Illumination.—Although in most industries the expenditure for modern lighting is over one per cent of the production cost, in mining only about one-half this amount is usually allowed for lighting, a "saving" which is highly imprudent when it is considered that the total cost of accidents in mines is between 20 and 25 per cent of the payroll. As an essential part of the operations, lighting also directly influ-

ences production. In cases where expenditures have been made for improved lighting in mines, the benefits have been speedily realized.

Learning Through Vision.—Confirming the general belief that the eye is the most important organ in learning, Dr. Joseph J. Weber of the University of Texas has recently made psychological tests showing the following percentages for learning through the various senses: visual, 46 per cent; kinaesthetic, 22 per cent; auditory, 18 per cent; instinctive, 8 per cent; cutaneous, 4 per cent; and olfactory and gustatory, 2 per cent.

Social Security Board Defines Economic Blindness.—Thirty-six states are now co-operating with the Social Security Board in granting financial assistance to the needy blind. The Board has set up a definition of blindness which is based on the definition of economic blindness proposed by the American Medical Association in 1934, and differs but little from that definition. It reads as follows:

"In general, central visual acuity of 20/200 or less in the better eye with proper correction has been considered as economic blindness. An individual with central visual acuity of more than 20/200 in the better eye with proper correction is usually not considered blind, unless there is a field defect in which the peripheral field has contracted to such an extent that the widest diameter of the remaining visual field subtends an angular distance no greater than 20 degrees."

Syphilis as an Etiologic Factor in Blindness.—Alfred Cowan, consulting ophthalmologist to the Blind Pension Fund of Pennsylvania, has recently stated that there are approximately 14,000 known blind persons in the State of Pennsylvania. This number represents probably half the total blind in this commonwealth, because many who are blind do not apply for pension. Of this number he estimates 5 or 6 per cent are blind due to syphilitic optic atrophy. He has found syphilis the etiologic factor in blindness in 566 cases out of a total of 1,898 in a series tabulated which

did not include cases of blindness due to trauma, senility, and congenital anomalies.

Vision of Animals.—As a preliminary to studying the visual acuity of human infants, John Warkentin, a young scientist at the University of Rochester, has been experimenting with animal vision. His apparatus consists of a vertical hollow cylinder, five feet high and four feet in diameter, in the inside of which are vertical black and white stripes ranging from five inches down to $\frac{1}{16}$ of an inch. If an animal placed inside the cylinder makes eye or head movements following the rotation of the cylinder, it is assumed that it can see the stripes, and the narrower the stripe perceived, the sharper the vision is assumed to be. Through the use of these tests it was found that:

White rats, white mice, and Gila monsters have extremely poor vision. Frogs, toads, alligators, and opossums have poor vision. Snakes, contrary to popular supposition, have good vision. Those tested included garter snakes, king snakes, ribbon snakes, and rattlesnakes. Their vision is poorest just before shedding their skins and best just after shedding, because the snake's cornea grows opaque as shedding time nears and is sloughed off with the skin. Turtles, woodchucks, guinea-pigs, rabbits, and gophers have good eyesight. Cats and birds see best of all.

Guinea-pigs and dogs vary greatly from one individual to another. Monkeys could not be tested because they kept peering curiously over the cylinder's top. Wild rabbits see better than tame rabbits; normally pigmented creatures see better than albinos.

Yellow Blackboards.—The British National Institute of Industrial Psychology has recently published a report which threatens to put the blackboard along with the slate among educational antiquities. In copying from a blackboard children have to move their eyes from a black surface with a reflection factor of 10 to 15 per cent to a white surface with a reflection factor of 85 to 90 per cent. The object of the work done by the Institute was to determine whether a board with a far higher reflection factor than the blackboard would enable children to copy from it more quickly and with

less eyestrain. As a white board would be likely to cause glare, a light yellow board was chosen for the experiments. Blue was chosen as the color of the chalk. Two methods—a laboratory reaction-time test and classroom tests—were used. The results showed clearly that the words on the yellow board were read more rapidly than those on the blackboard, the average difference being 15.4 per cent. In the classroom experiments the speed of copying the usual white letters on a black board was compared with that of copying dark letters on a light board. The results pointed definitely in the same direction: the children were found to copy nearly 10 per cent more in the same time from the yellow board than from the black board. Further investigation is being made to find out what are the most suitable materials for colored boards found best from the visual standpoint.

Specs Before the Eyes.—In sprightly phrases J. C. Furnas, in a recent issue of *The Saturday Evening Post*, presents a popular survey of spectacles, giving their history with many oblique comments on the human idiosyncrasies revealed in fashions in glasses and enumerating the mishaps which may befall the human eye. Although the article is written in whimsical vein, the statements are well documented and present valuable information to the lay reader.

Summer Round-Up of Children.—With an objective of correcting and preventing remediable defects in children, especially those between the ages of one and five, the Summer Round-Up of the National Congress of Parents and Teachers will be opened by local parent-teacher associations beginning May 15.

Do You Have These Issues?—THE SIGHT-SAVING REVIEW, having exhausted its supply of the following issues, will pay fifty cents for each copy returned to its office: Vol. I, No. 3; Vol. V, Nos. 2 and 3; Vol. VI, Nos. 1, 2, 3, and 4; and Vol. VII, No. 2.

National Society Notes.—The Society was represented at the annual meeting of the International Association for the Prevention

of Blindness and at the Fifteenth Ophthalmological Congress held at Cairo, Egypt, by Dr. Park Lewis, first vice-president, and Mr. Lewis H. Carris, managing director. Upon his return Mr. Carris was called to Tennessee to aid in formulating a new state program for the prevention of blindness.

In talks given before two groups of illuminating engineers, Mrs. Winifred Hathaway, associate director, stressed the importance of correct lighting as a means of conserving vision. On January 13 she spoke at the Residence Lighting Forum of the General Electric Company, held at the Grand Central Palace, New York City, and on March 29, at the Edison Electric Institute in Chicago, she delivered a paper on "Sight Saving: A Co-operative Program." Other co-operative activities in which she took part included an address at the luncheon meeting of the Sight-Saving Council of Cleveland on February 16; participation in the International Council for Exceptional Children, held at Buffalo, N. Y., February 17–19; and attendance at the National Education Association Convention in Atlantic City, February 28–March 5.

This convention was also attended by Miss Anette M. Phelan, Ph.D., staff associate in education, who, on behalf of the Society, conducted the breakfast meeting of the Advisory Committee for Teacher Education, where she presented a report on "Eye Health in Teacher Education." From March 21–24 she visited Syracuse University, Syracuse, N. Y., where she conferred with administrative officers and faculty of the University regarding eye health problems of the students and proposed the inclusion of an eye health program in the curricula for high school teachers.

Mrs. Eleanor Brown Merrill, associate director, and Miss Eleanor W. Mumford, R.N., the Society's new associate for nursing activities, attended the Conference on Better Care for Mothers and Babies called by the Children's Bureau in Washington, D. C. Mrs. Merrill's activities in the work of the Interorganization Committee on Sight Conservation included field visits to Columbia, S. C., and Concord, N. H.

At the invitation of the Pennsylvania Association for the Blind in Wilkes-Barre, Pa., on February 10, Miss C. Edith Kerby, statistician, spoke at the Institute for Public Health Nurses on "Sta-

tistical Guideposts in the Prevention of Blindness Movement." Following this, she was called by the Indiana Department of Public Welfare in Indianapolis, for assistance in the classification of records of recipients of blind assistance. A request for similar services was made in March by the State Department of Public Assistance, Charleston, W. Va.

Radio talks delivered by staff members proved an effective medium of informing the lay public on care of the eyes. On January 10 Miss Isobel Janowich, editor, spoke on "Save Your Eyes," and on January 21 Miss Regina E. Schneider, secretary, gave a talk on "Eye Health." In a radio interview of the Women's Round Table of the Air, Mrs. Winifred Hathaway answered questions which frequently arise in the mind of the layman concerning eye care.

Current Articles of Interest

Some Practical Experiences with Contact Lenses, Alexander G. Fewell, M.D., *Pennsylvania Medical Journal*, January, 1938, published monthly by the Medical Society of the State of Pennsylvania, Harrisburg, Pa. In the beginning, contact glasses were employed largely for the correction of conical cornea or other corneal irregularities. Gradually, they have come to serve a much wider field. Today they are used to correct not only corneal deformities but myopia, hyperopia, high degrees of astigmatism, nystagmus, aphakia, and in many cases they are used for cosmetic purposes and for safety, in athletics. They are also used as a protective device and a therapeutic aid in certain pathologic conditions of the eye and lids.

Although these glasses correct all corneal astigmatism, they are not suitable for those with any great amount of lenticular astigmatism. Needless to say, they cannot help those with much depreciated vision caused by a diseased condition of the eye.

The main disadvantage of contact lenses is the great amount of time and trouble required to prepare them and to determine whether the patient can tolerate them at least for a period of three hours. This in turn leads to the further disadvantage of a cost which is in many cases prohibitive.

Management of Eye Injuries, M. C. Baker, M.D., *Kentucky Medical Journal*, February, 1938, published monthly by the Kentucky State Medical Association, Bowling Green, Ky. Stressing the importance of treating all eye injuries as serious, the author discusses the types of injuries most frequently encountered in industry and indicates treatment in each case. The figures which he quotes on industrial eye accidents present a striking picture of the serious nature of eye injuries from the viewpoint of compensation.

National Policy to be Adopted in a Tropical Country for the Prevention of Blindness, A. F. MacCallan, C.B.E., *British Journal of Ophthalmology*, February, 1938, published monthly by George Pulman and Sons, Ltd., London, England. Opening with a discussion of the history of blindness in Egypt, the author, an authority

on trachoma, analyzes the statistics of the Ophthalmic Hospitals of Egypt and elaborates on the reasons for the prevalence of such diseases as ophthalmia neonatorum and trachoma, as well as diseases which lead indirectly to blindness, such as smallpox and vitamin deficiency diseases. He then makes a survey of the means of preventing blindness, through the establishment of hospitals and clinics; laboratory studies; examinations of school children; and sanitary measures. The advances made since 1911 show that these measures have been effective to such an extent that the percentage of blindness among patients in the Egyptian Government Ophthalmic Hospitals has decreased more than two-thirds.

Vitamins in Treatment and Prevention of Ocular Diseases, Arthur M. Yudkin, M.D., *Archives of Ophthalmology*, March, 1938, published monthly by the American Medical Association, Chicago, Ill. Analysis of laboratory statistics and clinical observations reveals that vitamins play a definite rôle in the therapy of ocular diseases. Vitamin A seems to be useful in the treatment of corneal inflammations and chorioretinal disturbances. The normal function of the rods and cones of the retina is enhanced by the use of vitamin A. Vitamin B complex is useful in the treatment of toxic amblyopia, particularly that produced by the use of alcohol and tobacco. In patients in whom focal infection is thought to be the underlying cause of the ocular inflammation, a combination of vitamin A and B complex is helpful. Vitamin C has been used for extravasation of blood in the vitreous, choroid, and retina, but the author finds that lemon juice is more beneficial. Lemon juice is also helpful in ocular disturbances in which the lesion may be caused by improper vascular compensation. At the present time no definite use in ophthalmology is indicated for vitamins D and E.

The Significance of Heredity in Ophthalmology. Preliminary Survey of Hereditary Eye Diseases in Tasmania, J. Bruce Hamilton, *British Journal of Ophthalmology*, February, 1938, published monthly by George Pulman and Sons, Ltd., London, England. In a study of 53 unselected pedigrees, the general conclusion is that hereditary eye disease in Tasmania conforms to Mendel's laws and may be either dominant or recessive, but is usually recessive and occurs more frequently in males than in females, although females who are not themselves affected frequently act as carriers.

The Nature of the Visual Process, Selig Hecht, *Bulletin* of the New York Academy of Medicine, January, 1938, published monthly by the New York Academy of Medicine, New York. A lecture given before the Harvey Society, tracing the history of experiments in the physiology of vision. It is an up-to-date survey of subjects which have declined in interest during the past 30 years, although experiments are still being made. The author concludes that much is expected from the direct photochemical and chemical approach to the study of vision, and it is to be hoped that the next few years will witness the fruition of these efforts.

A Study of Miners' Nystagmus, Raymond S. Brock, M.D., *British Medical Journal*, February 26, 1938, published weekly by the British Medical Association, London. This paper, based on a study of nystagmus in 15 pits of North Wales over a period of 10 years, discusses the eye movements and theories of causation of nystagmus, and outlines suggestions for the prevention of this frequent affliction of miners.

Hygienic Lighting in the Home, Miles A. Tinker, Ph.D., *Journal of Home Economics*, March, 1938, published monthly by the American Home Economics Association, Washington. A discussion of: (1) intensity of light, (2) quality of light, and (3) distribution of light, as determinants of hygienic illumination. The author summarizes the findings of recent experiments in lighting and applies them to the home. The distribution of light is of especial importance, and it is emphasized that "no light source should be in the visual field during visual work if the best working conditions are to be maintained."

Technique of Goniotomy, Otto Barkan, M.D., *Archives of Ophthalmology*, February, 1938, published monthly by the American Medical Association, Chicago. Goniotomy, or the opening of Schlemm's canal under direct vision, is an operation for the relief of that form of chronic glaucoma which is characterized by an open angle and normal depth of the anterior chamber. The success of the operation depends on two essential factors: (1) the proper selection of suitable cases by a preoperative biomicroscopic examination of the angle of the anterior chamber, and (2) the use of a

specially made contact glass, the prismatic action of which provides a magnified picture of the inside of the angle of the anterior chamber, so that the surgeon is able under direct vision to guide his knife from the temporal limbus across the anterior chamber until it strikes the trabeculum on the opposite side.

Results in the 25 eyes operated on reveal that the tension in those cases in which the trabeculum has been incised over one-fourth of its circumference has been normalized to date, the longest period of observation being two years. In other cases in which the incision was insufficient in extent the tension has been normalized, but only with the additional use of miotics. The tension in these cases, however, was improved by the operation, since miotics had been insufficient to normalize it before operation. It seems likely that with the present improved technique a high percentage of completely successful results will be maintained and that re-operation will be required in only a few cases in which the results were incomplete.

The essence of goniotomy is its complete safety. No complications or injurious sequelae have been observed in any case in which the operation has been performed. This makes it especially adapted to early operation, which is the greatest need in the surgical treatment of glaucoma today.

Management of Intraocular Foreign Bodies, David F. Gillette, M.D., *New York State Journal of Medicine*, March 1, 1938, published semi-monthly by the Medical Society of the State of New York, Albany. The first step in the treatment of intraocular wounds is an exact, searching history, including the possibility of an injury, the type or manner of work, whether the machines, tools, and metals used are magnetic, and the proximity to and occupation of fellow workmen. The second essential is a methodical examination, including a search for wounds of the lids, especially their margins, of the cornea, conjunctiva, sclera, iris, lens capsule and cortex, together with a careful study of the anterior chamber, vitreous, and all visible portions of the fundus.

The magnet and x-ray are invaluable aids to diagnosis, and should aid in the choice of route. The route of operation depends on the entrance wound—the trauma—and the size, shape, and location of the foreign body.

Senile Changes and Degenerations of the Human Eye, Benjamin Rones, M.D., *American Journal of Ophthalmology*, March, 1938, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. The old adage that "a man is as old as his arteries" is applicable to the changes that occur in the eye during advancing years. Vascular changes are of fundamental importance. Impaired nutrition resulting from this will explain the deposition of fat globules in the various structures. It is also well known that initial proliferative changes leading to subsequent degenerations are attributable to faulty circulation.

The Treatment of Ocular Syphilis, Daniel Kravitz, M.D., *American Journal of Ophthalmology*, February, 1938, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. This article is devoted chiefly to the use of drugs in the treatment of ocular syphilis, with emphasis on the importance of early treatment. The drugs used in syphilis are arsenic, bismuth, mercury, and the iodides. Of these, by far the most important are the arsenicals, because they are the only drugs that are actively treponemacidal. Except tryparsamide the arsenicals are contraindicated if the kidneys are impaired, in debility, and in advanced cardiovascular disease.

The arsphenamines may cause ocular reactions which are classified in three groups, as follows: 1. A true toxic reaction, as shown by a conjunctival hyperemia, chorioretinitis, corneal necrosis, and an exfoliative keratitis associated with an exfoliative dermatitis. 2. Ocular therapeutic shock—the Jarisch-Herxheimer reaction, which may appear as (a) an intensification of an existing lesion, (b) a flare-up of a quiescent lesion, or (c) as the unexpected appearance of an inflammatory process. 3. The third type of reaction is the neuritic or iridic recurrence following insufficient treatment in early syphilis.

Snake Venom: Its Use in Postoperative Hemorrhage of the Eye, W. F. Swett, M.D., *California and Western Medicine*, March, 1938, published monthly by the California Medical Association, San Francisco. In the author's experience with several stubborn postoperative hemorrhage cases he used moccasin venom in a 1:3000

concentration and found it excellent as a coagulant. Although his study includes only six cases, the treatment in all was so effective that he feels confident in stating that "moccasin venom has a definite place in the control of postoperative bleeding, and also has possibilities as a prophylactic procedure which may be used in intraocular surgery."

Trends in Aviation Lighting, F. C. Breckenridge, *Transactions of the Illuminating Engineering Society,* March, 1938, published monthly except August and October by the Illuminating Engineering Society, New York. The American development of the art of aviation lighting has passed through four periods, which may be characterized as the primitive period, the experimental period, the period of expansion, and the transition period. The period of transition, beginning in 1936, has presented new problems, the solution of which cannot altogether be predicted. Of the new devices brought out during the past year, several appear to be isolated improvements unrelated to any general development of the aviation lighting art. The others all reflect the influence of the improved radio facilities, the heavier traffic, and the higher speed of airplanes. The need now is for more equipment and closer co-ordination with the radio aids. If beacons are to be spaced closer, if floodlights are to be added so that glare will be avoided under all wind conditions, if approach and contact light systems are to be added to existing facilities, lighting engineers must find means of doing them more economically.

Book Reviews

HANDBOOK OF OCULAR THERAPEUTICS. Second Edition. Sanford R. Gifford, M.D. Philadelphia: Lea and Febiger, 1937. 341 p. ill.

The second edition of this concise book on ocular therapeutics is without question the best presentation of recognized therapeutic methods available at the present time. Pathogenesis and diagnosis are discussed only when they definitely relate to treatment. "Office surgery" alone is considered in detail.

This book may be divided into two major sections. The first part deals with the ophthalmological armamentarium required for adequate office practice; the nature and use of the drugs employed in treating eye diseases; and the peculiar characteristics of vitamins and other accessory food factors of benefit in certain ocular conditions; and, in addition, considers the endocrine glands and their extracts.

An unusual chapter in the first section is the one on specific and nonspecific protein therapy. Discussion of the various immune sera and vaccines and, in particular, of tuberculin in its diagnostic and therapeutic aspects is concise but sufficiently complete. The chapter on physical therapy includes phototherapy, diathermy, roentgen ray and radium irradiation, and the use of the thermophore and massage in relation to eye diseases.

The second part of the book considers the diseases peculiar to the eye and its adnexa. Each disease is considered carefully and adequate treatment is described in detail. Directions are never complicated and the author has tried in every way to make treatment an office procedure, so far as possible. A chapter on some of the more common ocular injuries is included. Diseases such as retinitis pigmentosa and myopia, the treatment of which is based largely upon experimental knowledge, are discussed, and the present day methods are described.

An adequate bibliography is given at the end of each chapter. This book deserves a place in the library of every ophthalmologist, and is a most valuable contribution to ophthalmic literature.

—CONRAD BERENS, M.D.

NURSING IN DISEASES OF THE EYE, EAR, NOSE, AND THROAT—AS PRACTICED IN THE MANHATTAN EYE, EAR, AND THROAT HOSPITAL. David H. Webster, M.D., John R. Page, M.D., Francis W. White, M.D., Alfred G. Langmann, M.D., Andrew A. Eggston, M.D., and Mary P. Brown, R.N. Philadelphia: Saunders Company, 1937. 288 p. ill.

This text, as the title implies, has been prepared for use in a particular hospital. The preface to the first edition (published in 1910) states that the text has attempted to meet the fundamental lacks in the nurse's basic education. This reviewer would feel that some of these lacks had been otherwise met now; and would prefer to see the first nine chapters resolved into one chapter dealing with the application of such fundamental knowledge and of nursing principles and techniques, to conditions of the eye, ear, nose and throat, with some emphasis on the social and preventive aspects of these conditions. The chapters on the eye would certainly be enriched by such treatment. These chapters contain excellent photographs and diagrams; the presentation of anatomy and physiology is especially clear.

—ELEANOR W. MUMFORD, R.N.

CONTROLLED READING. Earl A. Taylor, Ph.D. Chicago: University of Chicago Press, 1937. 367 p.

Although not a systematic text in diagnostic and remedial practice, this treatise does belong in the important area of reading. It consists of a doctoral dissertation plus considerable supplementary material. It is called "a book for educators and eye specialists." In addition to measurement for diagnosis and treatment, considerable space is devoted to source materials and development of techniques for use by the teacher and in the reading clinic.

Part I consists of an interesting collection of photographs and comprehensive bibliographies of those persons who have been most prominent in reading research. Part II is an exhaustive summary of techniques employed to study eye movements in reading. This includes pictures of the apparatus and illustrative records. The Metron-O-Scope is described in Part III. This is a mechanically operated, short-exposive apparatus used to build up left to right sequences of perception during actual reading. The author's ex-

periments in diagnostic and remedial reading are described in Part IV.

Several approaches were employed in this study of reading disability. Some of the findings follow: The eye movements of failing students were found to be less effective than for children making normal progress. Furthermore, the normal group showed less tendency toward inadequate functioning of the visual mechanism in visual acuity, muscle balance, etc. The author considers that training with the Metron-O-Scope yields better gains than other methods of training to improve reading. Distinctly improved reading status resulted from prism training for fusion, plus Metron-O-Scope reading.

Certain criticisms of the treatise suggest themselves: The control and experimental groups in certain comparisons were not adequately matched in all respects. The author tends at times to magnify the importance of discovered differences. Although the author does get marked improvement through use of the Metro-O-Scope, he has not proved that equal improvement cannot be obtained by other means. Finally, there is a tendency to overemphasize physiological factors as determinants of reading disability.

There are, however, certain distinct contributions in this book. The historical sketches on methods and contributors are outstanding. Attention is called to the application of binocular photographs of eye movements for studying certain types of disabled readers and for certain problems confronting optometrists, oculists, and clinical psychologists. The Metron-O-Scope is fully described. This is likely to prove, from the pupil's viewpoint, a highly interesting method of improving reading. An attempt to co-ordinate the work of eye specialists with that of psychologists and educators is praiseworthy. The book may be considered an important contribution to diagnostic and remedial reading.

—MILES A. TINKER, PH.D.

HEALTH EDUCATION OF THE PUBLIC: A PRACTICAL MANUAL OF TECHNIC. W. W. Bauer, M.D., and Thomas G. Hull, Ph.D., with a foreword by Morris Fishbein, M.D. Philadelphia: W. B. Saunders Company, 1937. 227 p. ill.

Workers in the field of public health education will find this handbook of inestimable value. It should serve also as an excellent

textbook for either medical students or journalism students who wish to learn the technic of this work. The authors are exceptionally well qualified, as Dr. Bauer is director of the Bureau of Health and Public Instruction in the American Medical Association and Dr. Hull is director of its Bureau of Exhibits.

"The field of adult health education has been filled largely by workers who have gravitated into it or been propelled into it from allied fields," the authors explain in their introduction. "Without the benefit of formal training and with little more than a keen realization of the vast problem which confronted them, these men and women have gone at the problem from various angles. Each has used to the best of his ability the tools at his command. Principal among these tools are the newspaper, the pamphlet, the radio and the platform. Out of the experience of many workers there has grown up a formidable mass of knowledge and experience. It is now possible to state with considerable definiteness what are the functions, the purposes, the advantages, the disadvantages of the several media which are available to the health educator."

Instead of the lengthy theoretical discussions found in other books on this subject, the authors get down to "brass tacks" immediately, and give us in the clearest sort of language a practical outline of the principal methods by which the public may be kept informed on health matters. To one who is professionally engaged in public health publicity, this very practical book serves as a stimulating reminder of opportunities which exist for reaching the adult population through such media as newspapers, magazines, books, the radio, motion pictures, stereopticon slides, meetings, exhibits, pamphlets, and correspondence.

—DAVID RESNICK

Briefer Comment

YEAR BOOK OF THE EYE, EAR, NOSE AND THROAT. E. V. L. Brown, M.D., Louis Bothman, M.D., George E. Shambaugh, M.D., Elmer W. Hagens, M.D., and George E. Shambaugh, Jr., M.D. Chicago: The Year Book Publishers, Inc., 1937. 640 p. ill.

The section by Drs. Brown and Bothman, dealing with the eye, occupies more than one half of the book and consists of many brief

descriptions of disease conditions of the eye, including discussions of clinical cases. The illustrations deal largely with operative techniques and include several progressive studies of diseased eyes which have responded to treatment.

VOCATIONS FOR THE VISUALLY HANDICAPPED. Louise Wilber. New York: American Foundation for the Blind, 1937. 224 p.

This volume is an excellent source of information for the blind in search of a career, but it should more accurately have been entitled "Vocations for the Blind," as it makes no mention of the special training required by the "visually handicapped" who are not blind.

A LAYMAN'S HANDBOOK OF MEDICINE. Richard C. Cabot, M.D. Boston and New York: Houghton Mifflin Co., 1937. 542 p. ill.

As this volume was written with special reference to social workers, it stresses those diseases with which the social worker may most frequently come in contact. The section on the eye gives a brief discussion of such common eye troubles as conjunctivitis, keratitis, iritis, and cataract, indicating how the symptoms of each may be recognized. Some discussion is also given to such visual defects as astigmatism, myopia, and hypermetropia. The book is relatively elementary, but is written with such fine common sense that it may well be recommended to teachers and social workers with a limited knowledge of physiology.

SYPHILIS, THE NEXT GREAT PLAGUE TO GO. Morris Fishbein, M.D. Philadelphia: David McKay Co., 1937. 70 p. ill.

This highly readable text defines the terminology of syphilis, describes the variety of circumstances under which the disease may be acquired, and stresses the importance of prompt medical care. Its purpose is not to shock, but to answer calmly and factually the questions regarding syphilis which most frequently arise in the mind of the layman. Pictorial statistics, posters, and photographs aid greatly in emphasizing the social significance of control of this great plague.

SCHOOL SIZE AND SCHOOL EFFICIENCY. Warren C. Seyfert. Cambridge: Harvard University Press, 1937. 316 p.

An investigation to ascertain the extent to which size of school affects the efficiency of secondary schools. Following are the chief subjects discussed: Organization of instruction; teaching staff; program of studies; extra-curriculum; and relationship with other schools.

HEALTH SECTION REPORT. New York: Health Section Secretariat, 1938. 242 p.

A reprinting of the papers delivered at the Health Section of the Seventh Biennial Conference of the World Federation of Education Associations held in Tokyo, Japan, August, 1937.

HOW ADULTS READ. Guy Thomas Buswell. Chicago: University of Chicago Press, 1937. 158 p. ill.

An analysis of reading habits of adult subjects who vary greatly in educational and occupational background. The study includes eye-movements in reading, oral reading, visual ability, and vocalization in silent reading, and indicates results gained in remedial experiments.

DIE AUGEN IHRER KINDER SIND IN GEFAHR! M. Klímová-Fügnerová, M.D., and A. Steiner. Prague: M. Schulz, Inc. 24 p. ill.

This very attractive paper-bound booklet is notable chiefly for its clever make-up and interesting charts and pictures, which can be understood even by those who are unfamiliar with the two languages in which the booklet is published, German and Bohemian. The text deals chiefly with a simplified discussion of the physiology of the eye and the necessity for proper lighting, illustrated by several "before and after" pictures.

YOUTH EDUCATION TODAY. Sixteenth Yearbook, American Association of School Administrators. Washington, 1938. 512 p. ill.

This survey of youth education covers the training of youth not only in the classroom but in the more important social relationships within the school walls. The material is compiled by authorities

in the various fields of youth activities, who discuss the most effective means of adjusting young people to the world. The very useful appendices give detailed information about youth-serving organizations and should be of particular value to the teacher with a wide social outlook.

Books Received

PUBLIC MEDICAL SERVICES: A SURVEY OF TAX-SUPPORTED MEDICAL CARE IN THE UNITED STATES. Michael M. Davis. Chicago: University of Chicago Press, 1937. 170 p.

THE STANDARDIZATION OF AN AUSTRALIAN READING TEST. G. A. McIntyre and W. Wood. Melbourne: Melbourne University Press, 1935. 72 p.

SCHOOL MYOPIA. Jacob Raphaelson. Privately printed, 1937. 24 p.

Current Publications on Sight Conservation

Note.—The National Society for the Prevention of Blindness presents the most recent additions to its stock of publications. Except for the more expensive ones, single copies are sent free upon request. Unless otherwise specified, they are reprinted from THE SIGHT-SAVING REVIEW. New publications will be announced quarterly.

260. Sight Begins at Forty, Ellice M. Alger, M.D. 8 p. 5 cts. The eyes of the middle-aged are subject to many diseases and changes, yet, if properly cared for, they may be as efficient as they ever were in youth.

261. A Consideration of Student Eye Health from the Ophthalmologist's Point of View, William L. Benedict, M.D. 12 p. 10 cts. After presenting a brief survey of eye defects encountered throughout life, the author concentrates on the eye problems of the adolescent and youth of college age and indicates that many of these problems may be solved by proper diet, satisfactory refraction, and correct illumination.

262. The Fifteenth International Ophthalmological Congress, Park Lewis, M.D., F.A.C.S. 12 p. 10 cts. An account of the activities during the Congress and a vivid description of the atmosphere of the Egyptian setting.

263. The Vision of the School Child, Francia Baird Crocker, R.N. 8 p. 5 cts. Emphasized the facts that eye hygiene forms an important part of the school health program; and that a knowledge of the visual defects of children is of inestimable value to the teacher in understanding this as a cause of poor class work and of behavior problems.

264. The Program of Prevention of Blindness as it Relates to Nursing. 4 p. An outline of services which the National Society for the Prevention of Blindness offers to the nursing profession.

D111. Teacher Practices and Classroom Conditions Related to the Eye Health of School Children, Anette M. Phelan, Ph.D. Reprinted from *School Management*, January, 1938. 2 p. $.75 per 100. The author presents a brief discussion on proper hygienic classroom surroundings for eye health.

D112. Simple Eye Tests in a Pediatrician's Office: Their Value, Helen M. Johnson, M.D., and William Palmer Lucas, M.D. Reprinted from *California and Western Medicine*, October, 1937. 12 p. 5 cts. After three years' experience in testing vision of children the authors "feel that it is inexcusable for any pediatrician to omit routine eye tests from his physical examination and that *he must* work closely with some very good oculist. . . ."

D113. Lighting the Schoolroom, Harry S. Gradle, M.D. Reprinted from *Hygeia*, December, 1937. 4 p. $1.50 per 100. One of a series of articles on illumination.

D114. Light in the Home, Edward Jackson. Reprinted from *Hygeia*, January, 1938. 8 p. 5 cts. One of a series of articles on illumination.

D115. Lighting Standards, Walter B. Lancaster, M.D. Reprinted from *American Journal of Ophthalmology*, December, 1937. 12 p. 10 cts. The author sets forth the grounds on which a valid opinion must be based and gives "references to the experiments and investigations that are fundamental to a sound judgment about lighting in any given case."

D116. Sight Saving Classes Light the Way, Hazel C. McIntire. Reprinted from *Ohio Parent-Teacher*, January, 1938. 2 p. $.75 per 100. A popular discussion of sight-saving classes.

D117. Eyes in Industry, Conrad Berens, M.D. Reprinted from *Hygeia*, February, 1938. 8 p. 5 cts. One of a series of articles on illumination.

Contributors to This Issue

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As a staff reporter for the *New York Herald Tribune*, **Miss Emma Bugbee** has an established reputation for her human interest stories.

As former associate in nursing activities for the Society, **Mrs. Francia Baird Crocker, R.N.,** has been a frequent contributor to THE SIGHT-SAVING REVIEW.

Book reviewers: **Dr. Conrad Berens** is a member of the Society's Board of Directors; **Miss Eleanor W. Mumford** is the Society's associate for nursing activities; **Dr. Miles A. Tinker** is a professor of psychology at the University of Minnesota; **Mr. David Resnick** is publicity director for the Society.